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*Museum Rusticum et Commerciale:*

O R,

SELECT PAPERS

O N

AGRICULTURE, || ARTS, AND  
COMMERCE, || MANUFACTURES.

DRAWN FROM EXPERIENCE,

A N D

Communicated by GENTLEMEN engaged in  
these Pursuits.

---

Revised and Digested by several MEMBERS of the SOCIETY for the  
Encouragement of ARTS, MANUFACTURES, and COMMERCE.

---

VOLUME THE THIRD.

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*Hæ tibi erunt Artes.*

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L O N D O N :

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# C O N T E N T S

T O T H E

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THE Title and Contents to be placed at the Beginning, and the Index at the End of the Volume.

The Plate of the Drill and Harrow, facing Page 28.

Mr. Ogden's Fallow-cleaning Machine, to face Page 300.



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# Museum Rusticum, &c.

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For A U G U S T, 1764.

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V O L U M E the T H I R D.

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N U M B E R I.

*Reasons why some of the Wiltshire Farmers sow their Wheat-Seed sometimes so late as November, December, and January; in a Letter from Mr. Philips to the Editors.*

GENTLEMEN,

**A**LMOST every part of this kingdom has a method of farming peculiar to itself; and this I have often found to be true, in the many journeys I have made through various parts of the island.

A short time since, my occasions calling me down into the West, I stopped for a few days in Wiltshire, where I could not help observing, that the wheat-corn was remarkably backward, though it, in general, promised to be a good crop.

I thought it worth my while to ask some of the neighbouring farmers the reason of this appearance, when I was informed that most of the wheat was sown late, owing to a wet autumn, which prevented them from giving their land the necessary ploughing for that crop sooner than November, December, and even January.

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The soil is a pretty good loam, on a chalky bottom: and I found they often sow late; but whenever they do it, they take care to allow an additional quantity of seed, generally one fourth, or a third, more than they use when they sow early.

I was also told, that many benefits often resulted from such late sowing; particularly, the crop is generally clearer from weeds; for in early-sown wheat, poppies, and other noxious weeds, are very apt to get a-head, and greatly injure the corn. I even saw in my walks many early-sown fields, which rather seemed to be under poppies than wheat, as the poppies were in full bloom, and made a glaring appearance.

The Wiltshire farmers, the best of them I mean, often give their land four ploughings for wheat; and they find their advantage, as it is by such means brought to a fine tilth, and yields a good crop.

Another advantage they told me they had from sowing their wheat late was, that in the blooming season the weather was generally fine; whereas, in a wet summer, the bloom is often washed off from the forward-sown wheat.

But it must not be imagined this method of sowing wheat late is indiscriminately pursued: in many circumstances it would be very imprudent to do it.

This method of husbandry must, to meet with success, be chiefly practised on fallows, where the land is good, and has been well dressed.

Every crop, and method, has dangers to encounter; and the chief danger of late sowing is, that a frost may come on just as the seed begins to sprout; but then good land, well dressed, is not so subject to this misfortune as poor, unmanured land, that has, perhaps, been not half ploughed.

I find, from enquiry, also, that it is dangerous sowing wheat on clover lays on one ploughing only, unless it is done sooner than the middle of November; for the turf, or grass lay, forms a crust immediately under the seed corn; and this not only prevents its taking a firm rooting, but also exposes it to the ravages of field fowls, which  
are,



are, at this season, particularly voracious, as having a scarcity of food; and the infant plant is, besides, liable to be killed by the frost, just as it is about sprouting and shooting out its first leaf. It stands, therefore, to reason, and is warranted by experience, that wheat should not be harrowed in on a clover lay, on one ploughing, so late as after the middle of November, as the danger is great, though the loss may not always be certain.

You may not, perhaps, deem this letter so important as many which every month appear in your collection. I conceived the hints contained in it might be useful to some farmers, or I should not have given myself the trouble of writing it, or you of perusing it: after all, I shall entirely acquiesce in whatever judgment you may pass on it, and, whether you insert it or not, shall not withhold from your work that degree of applause which, I think, it every way merits from the lovers of agriculture and country improvements.

Determined still to continue your constant reader, as long as you oblige the world with your monthly treasure,

I am, GENTLEMEN,

London,

Your very humble servant,

June 12, 1764.

JOHN PHILIPS.

## NUMBER II.

*Observations on sowing Wheat, making Composts, Covenants in Leases, and artificial Pastures; from an Essex Farmer to the Editors.*

GENTLEMEN,

AS I have been many years a farmer, it is not to be wondered at that I should know something of husbandry.

Experience, which is an excellent mistress, has, in fact, bestowed on me most of the knowledge I have acquired: I imagine, therefore, that a letter now and then, containing

the result of this experience, will not be unacceptable to you.

I perceive that your work is intended as a channel of communication, to convey the good usages of one part of the kingdom to other parts where they are less known: this is a very laudable scheme; and as I am apt to think we, in this county, are far from being bad farmers, I shall inform your numerous readers of some of our practices.

I have chosen that noblest of crops, wheat, for the subject of this letter, and shall therefore defer other matters to some future opportunity.

Most farmers chuse to sow wheat on a fallow; we, on the contrary, often, not without good reason, avoid it. Every fallow designed for wheat requires a good dressing of rotten dung, or some other manure; and this dressing, we imagine, often is the cause of a smutty crop, if laid on uncompounded; therefore, whenever I sow my wheat on a fallow, instead of laying on my muck heap unmixed, I make it into a compost in the preceding spring: this compost consists, according to the nature of the soil it is to be laid on, either of chalk, light earth, and rotten dung, or of lime, clay, and dung, laid in a heap, in alternate layers, or beds.

This compost-heap I cause to be frequently turned during the course of the summer, till it is thoroughly mixed, and forms one united mass of manure, rather crumbly than otherways.

With this manure I dress my fallows in the same manner farmers lay on their rotten dung alone; and I find, by experience, it is less apt to heat and canker the wheat-seed, and it is also much less inclined to mould and burn the seed.

This, I say, is my method of management when I sow my fallows with wheat as a first crop; but I more generally approve of making wheat the second crop after barley, oats, beans, or peas.

I am sensible many of your readers will be surpris'd at this method; and exclaim that it is impossible to get a  
good



good crop of wheat but after a good fallow; yet I know the contrary: it is from experience I know it; may I not therefore venture to assert it?

When I intend to sow wheat as a second crop, I lay my due quantity of compost on the land some time before I sow it with barley, oats, beans, or peas.

When this crop is off, the following year I sow wheat. You may suppose the land to be duly prepared by well-timed and careful ploughings; but I am to premise, that after beans and peas, being hoeing crops, the land is much sooner brought into good tilth, than after oats or barley.

The wheat sowed the second year of the fallow is, with me, generally a good crop, and almost always clear from smut and pepper-wheat.

If, by any accident, the wheat should be sickly, or pining, after Christmas, I bestow on it a top-dressing of wood ashes, foot, if I can get it, or coal ashes, if the soil happens to be strong: this seldom fails answering my expectations; checking the growth of the weeds, and forwarding that of the corn.

It is very frequently that I sow wheat in this manner for a second crop; but when I have an opportunity of choosing, which I cannot always do, as I must suit my crop to my wants, I prefer, for the first crop, beans or peas, either of which I take to do the land nearly as much good as a fallow.

Neither peas, nor beans, are, in my opinion, great impoverishers; and the frequent hoeing which they both require, if they are properly cultivated during their growth, brings the land into finer order than the best-regulated course of husbandry with the common implements could effect.

Wheat succeeds particularly well after either of these two last-mentioned crops; and I have found, by experience, that if peas, or beans, are made intermediate crops, and are well and properly hoed during their growth, land of a moderate quality may, without being impoverished

or

or hurt, be made to bear a continued succession of crops for many years; but it must be understood that it should, from time to time, be refreshed with proper dressings of well-prepared compost.

I know, many farmers think there is no such thing as carrying on a course of husbandry without allowing, once in three or four years, a year of fallow; but such are little acquainted with the benefit resulting from hoeing crops; and it is this benefit that has of late induced farmers to sow such immense quantities of turneps in the counties of Norfolk, Suffolk, Essex, and other counties adjacent.

Many of the advocates for intermediate fallows think that the earth requires rest; but this is a great mistake; for I could easily make it appear that, in a proper method of husbandry, land might be almost continually cropped, without being impoverished or worn out.

The real benefit accruing from frequent fallows is, that they allow the husbandman time and opportunity to bring, by good tillage, his land into proper order for the reception of the seed; but in the method of husbandry I would recommend, the land would always be kept, by frequent stirring, in such good tilth, that the time betwixt gathering the crops, and sowing the next succeeding seed, would be abundantly sufficient for any preparation it might require; for it is a well-known fact among husbandmen, that when land is well tilled and kept in good order, one ploughing will go much farther than three where the land has been neglected, is rough, and grown hard and cloddy, through inattention or laziness.

The doctrine contained in this letter may to many be new; yet certain I am, that the principles on which it is founded have so many advocates, that it would soon be very extensively adopted were the leases of farms made in a different manner to what they are.

The present form of leases is a great impediment to the progress of agriculture, for there is in almost every lease a covenant from the tenant to the landlord, that he will plough and sow the lands according to the custom of the country in which



which the farm lies, and allowing due fallow at fixed intermediate times; covenanting besides, that he will not turn up any old lays or pastures, though they might be much more proper for tillage.

By the first covenant herein mentioned, we find the farmer is prevented, by his lease, from substituting hoeing crops in the stead of fallows; so that when he is inclined to sow beans, peas, or other plants of the like nature, he must sow them as pay-rent crops; that is, instead of a crop of wheat, barley, or oats, which would have been sown had they not.

This restriction is replete with many and great disadvantages, and the more so, as it prevents many ingenious and sensible farmers from making experiments which might, and certainly would, tend to the improvement of husbandry.

By the second covenant mentioned above, a farmer must never plough up his old lays, though the land may have been laid down in a very unskilful and unhusband-like manner, may be barren towards the surface through the unskilfulness of the last ploughman who turned it up, and may, besides, on account of the nature of its soil, be much fitter for tillage than pasture.

I know it will be objected, that should the farmers have this liberty granted them, all the old lays in the kingdom would soon be turned up; but I cannot imagine they would act with so little caution. I would willingly compound for having a great quantity of old grass grounds converted to tillage, as I am well satisfied that the artificial pastures would, in many cases, be good substitutes for the natural grasses.

As to oxen, we have them to the full as good, when stalled to turneps, carrots, &c. as if they were fed in the finest fattening grounds: the same may be said of sheep; and it is well known that cows may be made to give a great deal of milk by feeding them on green lucern, saintfoin, clover, tares, cabbages, turnep-tops, and many other sorts of artificial pastures. For our horses, any of the  
above



above plants, to which we may add carrots, are equally good, especially with an addition of a mixture of ray-grass.

I am, GENTLEMEN,

Your constant reader,

Essex,

And humble servant,

July 3, 1764.

W. WOOD.

### N U M B E R   I I I .

*Reasons, consistent with sound Policy, why the Growth of Hemp should be encouraged in Ireland rather than in England, or America; in a Letter to the Editors.*

GENTLEMEN,

THE importance of this nation's not continuing in a dependent and precarious situation to foreigners for the supply of hemp, has engaged the attention of the legislature encouraging the growth of it in America, by offering considerable bounties on the importation of it from thence: but, considering the high price of labour there, it has been matter of doubt with some people, whether those bounties will be effectual for that purpose, or, on the whole considered, even if they should, whether that would be proper, if the same effect could, in another manner, be produced.

People will certainly employ themselves in such culture and occupation as will be most profitable. If the raising of hemp there be not so, to have it done must be by bounties, &c. that the difference in profit may be supplied to the persons who raise it; and then to them it will be equal how they are employed, if so much money arises to *them* on the foot of the account.

But this is not so in a national light; for if their occupation in this way produces but half so much as it would have done in another, that difference is a national loss: and as to the encouragement by bounties, that must arise  
out

out of the fund of taxes, and for so much is a diminution of the revenue, which, by other taxes, must be supplied.

The society of arts, &c. has encouraged the produce of it in England by domestic bounties, to which also some objections have been suggested, as by this means great quantities of land would be diverted from raising of corn; and if the corn-land now produces more national profit, the difference would be so much real loss; and by the increased number of hands which this may require, other manufactures might be affected, and diminished in the same proportion as this is increased.

But I imagine that the nation may be effectually supplied, free from the inconveniences here suggested.

There are immense quantities of fresh rich land in Ireland, proper for this purpose: the labour there bears no sort of proportion to that in America or England: a small bounty would be a sufficient encouragement, which need only be temporary, as, when this culture is once established there, the profit would of itself be a sufficient and subsisting inducement; and I doubt not but it would have the co-operation and assistance of the societies established there.

This would give employment to numbers of their inhabitants, who at present have scarce any; would occasion the breaking-up great quantities of land now under sheep-pasture; the number of sheep would thereby be diminished, and, in consequence, the price of wool raised, and the French prevented from having so much for their manufactures, which must therefore increase in price, and lessen in quantity.

On the whole, it is submitted to consideration, whether Ireland be not, in every point of view, the most proper place for this purpose, by,

GENTLEMEN,

Oxford,  
July 3, 1764.

Yours,

P. E.



## NUMBER IV.

*A cheap Kind of Fence, recommended in some Cases; with an Explanation of the Meaning of the Words Hay-Boot, and Hedge-Boot.*

GENTLEMEN,

AS we have lands of all possible varieties of soils in this neighbourhood, and among the rest great quantities of heath-ground, I have often had occasion to think, that one of the principal discouragements to the occupiers ploughing out these, is the apparent great expence of making the enclosure.

They have draughts, perhaps, which could till an additional piece of ground; they could spare seeds; nay, they could even procure manure of some sort, and even of the properest; but they are fully satisfied that the soil will not bear more than one\* course of crops, and must then be laid down again; and they are deterred, by the prospect of the expence of an enclosure, for this short space of time, in a country where *stakes* and *yethers* (as binders of *bassel* or *willow* are here called) are scarce, and must be far fetched.

I was therefore much pleased with the appearance of a slight, but very expeditious and cheap fence, which I saw raised the other day by a neighbouring farmer, who has nine children to be maintained by a small farm, which *almost all*, if *not all* of it, is won from the heath, a soil the most unpromising of its kind.

That emprefs, *Necessity*, had commanded him to attempt to win more: and his fence was such as, though neither very firm, nor very durable, was likely enough to answer his

\* In this, perhaps, they are mistaken, even with regard to corn; but it is certain, that many very good crops of *saintfoin*, which begins to be much cultivated amongst us, might be raised on our poor heath-grounds, once brought into tillage.

his temporary purpose, and may be useful to others whose situations resemble his, and is therefore recommended through the channel of your work. He takes the present vacant season, betwixt sowing his worse corn and his hay-harvest, to employ his hands and draught in enclosing and tilling this piece of ground. The only money he lays out is for sapling oak poles of about five or six yards long. These being cleft in the thickest part into four, and in the middle parts into three or two, make so many stakes that, on a probable supposition that the poles cost him three-pence each, his stakes will not stand him, besides his labour, to more than half a farthing each.

He takes the earth to make a bank for his hedge two spade-grafts deep, and his fods as long as he can well bring them up without breaking, observing always that the ends of his fods be cut *sloping*, not *perpendicular* to the surface, for obvious reasons, *viz.* that they will thus much more easily unite by any weight laid upon them, and the descending rains will less easily wash away the earth at the joining of the fods. He also takes care that the joinings of the second, or upper row of fods, shall be directly over the centre of the former, or under row, and throws all the earth of the second spade-graft of earth, beneath both the rows of fods, to the back of the fence, to support the work, observing also to slope his former row of fods from the bank.

Though all this will be easily understood by people acquainted with this sort of work, yet, as it is not easily conceivable by others, for whom it is chiefly intended, I have annexed a drawing to explain the manner of this operation.

In the next place, my neighbour drives his stakes somewhat longer than a yard, and well pointed, quite through, and near the centre of the fods of the second, or upper lay, and considerably into those of the former, or under lay, and at about the distance of half a yard from each other.

This work being finished, he takes the straggling furze (or whins) which grew among the heath, and he has



stubb'd for this purpose, and thrusts the heads of them very much forward to the face of the bank, contriving that the two main branches of the furze shall be one on one side, and the other on the other of each stake, or, as we say, astrut the stake.

Over all this he winds his longest black thorns, and finds his fence sufficiently strong without yethers or binders.

It is remarkable, that though the heath in question is of the most barren and unpromising kind, yet thorns grow to an amazing height in the hedge which divides this barren heath from the next adjoining cultivated ground; a plain proof that quickset may, with care, be raised to a most flourishing state on almost any soil, if *dry naturally*, or *made so by art*: and I think it clear that the moistest soil may have quick fences speedily by setting of willows, and other aquatics.

This subject of fencing leads me to explain the meaning of *hay-boot* and *hedge-boot*, so often met with in leases, and other deeds relative to lands; for, as I own, I never understood the distinction till I found it the other day in that excellent old writer, Mr. *John Norden*, so I suppose many of your readers may be in that case which was so lately mine, and wish for information, which I will therefore give in his own words.

*Baylie.* “What mean you by hay-boote? I have  
“ read it often in leases; and I promise you I did ever take  
“ it to be that which men commonly use in hay-time, as  
“ to make their forkes and tooles, and lay in some kinde  
“ of lofts, or hay-tallets, as they call them in the West,  
“ that are not boarded: and is not that the meaning?”

*Surveyor.* “I take it not. It is for hedging stuffe,  
“ namely, to make a *dead hedge*, or *raile*, to keep cattle  
“ from corne, or grasse, to be mowne.”

*Baylie.* “What difference then is there betwixt *hay-boote* and *hedge-boote*?”

*Surveyor.* “Some there is. For a *hedge* implieth a  
“ *quick-set* and *trees*; but a *hay*, a *dead* fence, that may be  
“ made one yeare and pulled downe another, as it is com-

“ mon

“ mon upon the downes. In many countries, where men  
 “ sow their corne in undefenced grounds, there they make  
 “ a *dead hay* next some common way, to keepe the cattle  
 “ from the corne.” See Surveyor’s Dialogue, B. v. p. 200.  
 I have only to observe farther on this subject, gentlemen,  
 that I do not find that the compilers of *French* dictionaries  
 make any distinction of *quick* and *dead hedge* under the  
 word *haye*, which they render *hedge* generally. It may,  
 perhaps, be worth the while of some curious gentleman  
 to enquire of intelligent *Frenchmen* whether the word *haye*,  
 in common speech, be restrained in this age to express a  
*dead hedge*. Be this point as it will; the use of the words  
*hay-boot* and *hedge-boot*, in leases, &c. seems to imply that  
 they are intended to express *different* things (though  
*tautology* is said to be the life of the law); and I know no  
 better distinction that can be advanced, than what Mr.  
*Norden*, in his character of surveyor, here gives.

In that antient book entitled “*Les Termes de la Loy*”  
 I find no distinction of *dry* from *quick* hedge; and the  
 author also\* advances that sense which Mr. *Norden* has  
 put in the mouth of his baylie above: but in this book no  
 authority for this sense is given.

I am, GENTLEMEN,

East-Newton,  
 May 20, 1764.

Your humble servant,

THOMAS COMBER, Jun.

*P. S.* It is usual to leave a small footing at the edge of  
 the ditch, to prevent the sods from falling into it; but  
 this often gives room to cattle to place their feet, and  
 pull down the work, or get over it. If the earth be firm,  
 and

\* The words are, “*Hay-bote, ou hedge-bote, est necessa-  
 “ rieuse pur faire et amend Haies, &c. Hay-bote auxy poit  
 “ estre prise pur necessa- rieuse stuffe pur faire rakes, forkes, et tiels  
 “ sembl’ instruments, oue queux homes asent en Somm. pur  
 “ tedder et faire feine.*” *Blount* also in his law dictionary (the  
 only one I have at hand) makes no distinction of *dry* and *quick*  
 hedge, but observes that *haya*, the law Latin word, is from the  
 French one, *haye*.

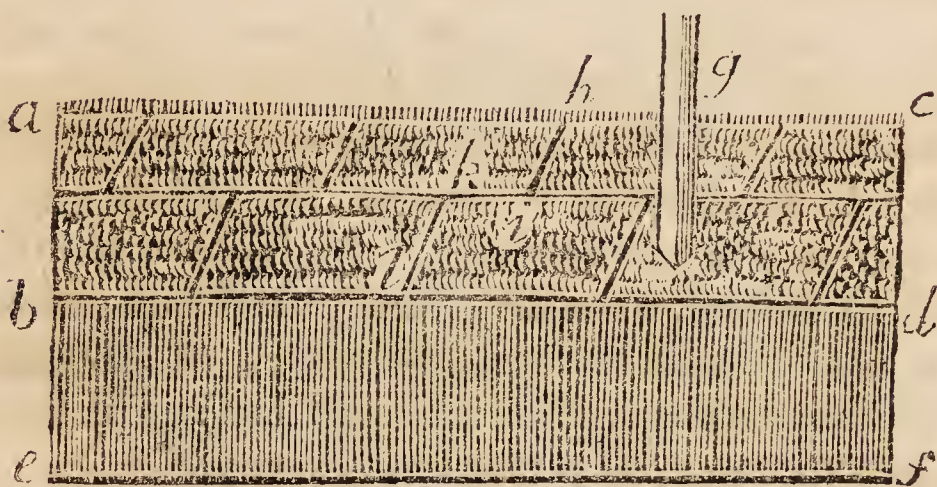


and the work well done, I think no footing is necessary; if any, one of not above an inch or two. To perform this work with success, it is adviseable to take a moist season in spring, that the fods may knit, and, if great drought succeeds, to water the bank. Pressing the fods together with the back of the spade is also absolutely necessary: and cattle should be kept off the bank, as the fresh grass is alluring.

May 22, 1764.

### FIGURE I.

*A full front View of the Bank and Ditch.*



### EXPLICATION.

*a b*, or *c d*, the height of the bank.

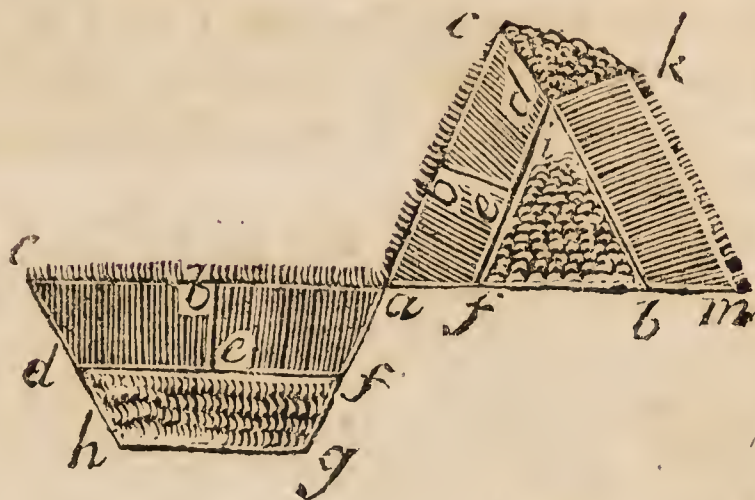
*b e*, or *d f*, the breadth of the ditch, whence the fods to make the bank were dug.

*h i*, and *k l*, express the oblique juncture of the fods in the upper and under lays.

*g*, the stake drove through the upper, and considerably into the under lay.

## FIGURE II.

*A View of the Section of the Bank and Ditch, with the Sods as they lay in the Ditch.*



## EXPLICATION.

The sod *a b, e f*, as it lies marked out in the ditch, is turned into the position it bears in the bank; and so is the other sod, *b c, d e*.

The triangle *f, i, l*, in the bank, represents the backing, or earth, taken out of *d, e, f, g, h*, the lower spade-graft in the ditch.

The sod *i, k, m, l*, I advise to be taken elsewhere, and clapped to the backing, unless the earth be very firm, to prevent the backing from slipping down: and the earth *d, c, k*, is clapped, with a spade, on the top of all.

## NUMBER V.

*Observations on Saxifrage, Cow-Parsley, &c.*

GENTLEMEN,

**Y**OUR correspondent E. L. (in page 472 of the First Volume of your work) highly recommends *saxifrage*, as what greatly improves both *butter* and *cheese*, in the opinion of himself, and all the dairy-men in his neighbourhood; and adds, that it is very common in the fine cow-pastures in the *Netherlands*, whence comes excellent cheese.



He speaks of it as common with us in *England*, but gives no description of it (probably because he supposes such description of it unnecessary, on account of its commonness); and I cannot find any, who pretends to know herbs in this part of the world, who can shew it to me. I am the more desirous to know it, because I have thoughts of ploughing out my cow-pasture soon, with no other view than to sow it down with grass, or grasses, most productive of good milk and butter.

I have looked, gentlemen, into old *Parkinson*, and find the plant which (I suppose) your correspondent means, not under his fourth class, of *saxifragæ plantæ*, break-stone plants, but under his eighth, of *umbelliferæ plantæ*, or *umbelliferous plants*. *Saxifraga pimpinella* makes the forty-first chapter of that class, or tribe; and the third species is the *pimpinella saxifraga major nostras*, the greater *English* burnet saxifrage, which he describes as being like the greater German burnet saxifrage, except that it is not above *half as large, less dented* at the edge, and of a *sadder green*, the stalks *smaller and shorter*, and the seed *sharper*. To know it then we must have recourse to his description of the former, *viz.* “ It hath divers *large and long* stalks of  
 “ winged leaves, one set directly opposite to another on  
 “ both sides, each being somewhat broad, a little pointed  
 “ and dented about the edges somewhat deeply, of a fresh  
 “ greene colour, almost shining; from among which rise  
 “ up one or more round hollow stalkes, three foot high  
 “ or more, set at the joints with the like, but lesser  
 “ leaves, and bearing at the toppes small umbells of small  
 “ white flowers; after which come small blackish round  
 “ seede, like unto parsley seede, but much hotter in taste,  
 “ and sharper upon the tongue. The roote is small,  
 “ long, and white, very like unto a parsley roote, but  
 “ much hotter in taste, and perisheth not after seede time,  
 “ but endureth long.”

The main difference, except size, which he maketh betwixt the *major* and *minor pimpinella saxifraga nostras*, the greater and less *English* saxifrage, is, that the less hath its leaves more finely indented.

He



He adds, that the *English* saxifrages grow in most of our meadows, and are *easily* to be found; but he acknowledges, that though we know, we must diligently look for them, as “ they lie hid among the grasse, *oftentimes scarcely* “ to be discerned.”

I wish, gentlemen, that your correspondent E. L. (or any experienced botanist) would, through your channel, communicate to the public a more exact description of this plant; and also philosophical reasons for the opinion that it improves butter and cheese, as I cannot deduce such improvement from any quality ascribed to it by the herbarists, unless we suppose that its *heat* makes cattle drink much, and thus encreases the quantity of their milk, and that its *deobstruent quality*, like parsley, makes the streams of milk *purser*, and, as being freer from principles of corruption, the cheese and butter to keep better.

This, however, I apprehend, is not \* what your correspondent means, but the improved taste of the cheese and butter.

Mr. E. L. warns us, that he recommends it not to be used *alone*, having only experienced it mixed with good meadow grass. He will oblige the public by informing them, through your channel, what are the other *principal* sorts of meadow grass mixed with it, that one may, in some measure, judge, from the nature of those grasses, what share of his success in making of cheese may reasonably be ascribed to *saxifrage*. If he will communicate the reasons of his neighbouring dairy-men, whence they conclude that saxifrage is the cause of the goodness of their

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D

cheese,

\* The *harder* or *poorer* the land, the better the butter and cheese will keep, though less will be got. Some lands are so rich, that the butter will not keep at all. It requires therefore great judgment to *meliorate* pastures and meadows, so as to answer the intention of the owner, according as he wishes to have *much* or *rich* milk, butter, &c. I apprehend Mr. E. L. to mean a *pasture* for his *cows*, though he speaks of a meadow, as little cheese is made in winter, and the virtues of plants must be much less discernible when given in hay, than when eaten green.

Comm.

cheese, he will farther oblige the public; for butter and cheese make so principal a part of our commerce near home, that we cannot be too well instructed in what relates to it.

There is a plant pretty common, called, in this part of the world, *cow-parsley*, I imagine because cows are fond of it; and, if so, it is probably an improver of their milk, butter, and cheese: and the nature of all the parsleys seems to resemble this *saxifrage*. *Parkinson* mentions no species of the parsley by the name of *cow-parsley*; but he describes one, which he calls the *white milky parsley*, every part of which, if broken, yields a *milky juice*.

A nameless correspondent, in Numb. XLVIII. of your Second Volume, informs you, gentlemen, that Mr. *Ray* has described the *red buttons* on the root of the *pimpinella sanguisorba*, which dyers use instead of *cochineal*, and thinks this plant the same as that which Mr. *Rocque* cultivates. In this you seem, gentlemen, to agree with him; and probably you are right. But what I have to observe is, that *Parkinson* thinks the circumstance of these red tubercles at the roots as true, or more true, of the *pimpinella saxifraga*, or our *English saxifrage*, than of the *pimpinella sanguisorba*, or *burnet*.

The curious reader may see an examination of the passages under either of these plants. The disquisition would be too tedious for the conclusion of a letter, from,

GENTLEMEN,

Your impartial correspondent,

East-Newton,  
May 23, 1764.

THOMAS COMBER, Junr.



## NUMBER VI.

*Of the Confusion of the Names Saxifrage, Burnet, and Burnet-Saxifrage, which seems at present to prevail.*

GENTLEMEN,

ONE of your correspondents, who signs himself E. L. at the foot of Numb CX. in your First Volume, has strongly recommended the culture of *saxifrage* in our meadows and pastures, particularly cow-pastures. As I had a design to improve my cow-pasture, I was particularly attentive to the recommendation of this plant; and having made all the enquiry I could about it, I wrote to you a letter on the subject.

In the course of my enquiry about this plant, I found that there is a plant which is called *burnet-saxifrage*, and which I apprehended to be *distinct* from either the *burnet* or the *saxifrage*, properly so called. However, I have lately seen so much confusion in the use of these names, that I apprehend he would do a real service to the public, who would give us a clear account of the distinction to be made in the use of them. As to *saxifrage*, I can only learn from the books of botany, and the description which such as pretend to botany in this country give, that it is a plant much resembling the *wild carrot*, that it has an umbell of white flowers, and that it seems not unlike a *smaller species* of the *earth-nut*.

As to the *burnet*, a clergyman in this neighbourhood, who knows more of botany than any body else I know, assures me, that the plant which has *always* been called *wild burnet* agrees not very well with the description which Mr. *Mills* gives of the *wild burnet* Mr. *Rocque* cultivates with so much success; and *especially* in that Mr. *Mills* gives it an *umbell* of *white* flowers, and this clergyman maintains, that it always bears an umbell of *brown*, or brownish flowers.



A skilful gardener in this neighbourhood, who has, for many years, had an intimate acquaintance with Mr. *Rocque*, shewed me this summer some *burnet* which he has cultivated in his garden, and which just made its appearance about an inch above the ground.

He assured me, that this was the sort which Mr. *Rocque* cultivates: and upon my asking him, whether or no it was the same kind as the *wild burnet*, he answered positively, no. I did not indeed ask him, whether or no the *wild burnet*, in his opinion, bore a *white* or a *brown umbell*, because I knew not then this different account of its flowers; but I am inclinable to think that he judges, as my friend the clergyman, that the *burnet* bears a *brown* flower, because he makes the *wild burnet* different from Mr. *Rocque's*; though Mr. *Mills*, and all the people who have given us any account of Mr. *Rocque's* cultivation, say, that he took the hint of cultivating this fodder from observing that the *wild burnet* continued green all the winter.

To make this *confusion* and *uncertainty* greater, Mr. *Mills* gives us, under the very article *burnet*, the following remarkable passage, viz. “Mr. *Worlidge* mentions, as another excellent quality of this plant,” (Mr. *Rocque's burnet*, for he has, in the immediately preceding lines, told us of a virtue which Mr. *Rocque* has discovered in his *burnet*) “that all good house-wives hold as an *infallible* rule, that there never need be bad cheese or butter, but especially cheese, where *saxifrage* grows; from whence,” adds he, “it cometh that the *Netherlands* abound much in that commodity, and only, as is supposed, through the plenty of this herb.” Vol. III. of *Husbandry*, page 291.

Now, gentlemen, if you look into your correspondent E. L's letter, you will find that he recommends the *saxifrage* as contributing chiefly to the goodness of the cheese of the *Netherlands*. In short, it appears hence, gentlemen, that Mr. *Mills* has no doubt but the *common saxifrage* is the same as Mr. *Rocque's burnet*; and, on the other hand, that your correspondent E. L. appears to have

had no kind of notion of this; for, if he had, he would scarcely have recommended, as a *new* or *neglected* grass, that which is now in the *highest vogue* by Mr. *Rocque's* cultivation, without so much as an hint that Mr. *Rocque* had undertaken this cultivation.

Mr. *Mills*, gentlemen, has engaged to give the public a *new* and *complete* system of *practical husbandry*. He promised his subscribers, that the whole should (as nearly as could possibly be calculated) be comprised in forty numbers. We have already got our forty numbers, our four volumes; and it seems the work is to be extended, but how much farther we are not told. It may be well worth the money to the purchasers; but, however, we have a right to expect every part complete; and, in the present instance, we might reasonably have expected, that when Mr. *Mills* considered the *saxifrage* as the same with Mr. *Rocque's burnet*, he would, at least, have favoured us with a word or two, at the bottom of the page, to shew his authority for regarding these *very different names* as expressive of the same plant.

What Mr. *Mills* has not done, we must hope from some of your *ingenious* and *public-spirited* correspondents, who will oblige many by answers to the following queries, *viz.*

I. What are the *real distinctions* betwixt the *burnet*, the *saxifrage*, and the *burnet-saxifrage*?

II. Whether Mr. *Rocque's burnet* be the common *wild burnet*?

III. Whether it bear an umbell of *white* flowers in general?

IV. Whether (since Mr. *Mills* declares it sometimes bears *red* flowers from the same seed as the *white*) this *burnet* does not sometimes bear a *brown* or *brownish* flower in the South? Whether, since our botanists in the North allow not that it ever bears a *white* flower, it may not derive the *brownness* of the flower with us from the difference of the soil?

V. What is the true name of this plant, resembling the *burnet* in other respects, but bearing a *brown* or *brownish* flower,



flower, if it be not *burnet*? How the garden and wild *burnet* differ?

Mr. *Mills* must now excuse me if I return to him for a minute or two; since people, who *buy* instruction, think they have a right to the best *instruction* which he who sells it can give, especially if they pay more for it than seemed to be the *original bargain*. On this important, and now favourite subject of *burnet*, Mr. *Mills* seems in another place to labour under something which looks like *confusion*, to avoid so offensive a term as *contradiction*.

He sets out (in page 283 of his third volume of *Husbandry*) with an assertion that Mr. *Rocque's burnet* is the *tragoselinum* of *Tournefort*; and in page 284 he makes the same plant the *tragoselinum majus* of *Miller*, which he calls the greater *burnet saxifrage*: and to leave no doubt of his meaning, he assures us, in page 291, line 29, 30, &c. that “the small oblong seeds of *burnet* are those of Mr. “*Miller's* first species of the *pimpinella saxifraga*, which “is *Tournefort's* *tragoselinum majus*.” He has also told us, in page 282, that the *burnet* of Mr. *Rocque* (for that is the *burnet* which the society for the encouragement of arts, &c. promote the culture of) is the *pimpinella* of *Linnæus*.

Now, from these passages laid thus together, must not any man of common understanding conclude, that the *tragoselinum* of *Tournefort*, the *tragoselinum majus* of *Miller*, the *tragoselinum majus* of *Tournefort*, the *pimpinella* of *Linnæus*, the *pimpinella saxifraga* of *Miller*, the *burnet saxifrage* of Mr. *Mills*, are only different terms to denote the same plant, viz. the *burnet* of Mr. *Rocque* and of the society? Certainly.

Another conclusion, which any reasonable man would draw from the same premises, is, that Mr. *Mills* intended to denote that the *burnet* of Mr. *Rocque*, and the society, should, according to the known distinction of the *pimpinella* into *saxifraga* and *sanguisorba*, belong to the former class, or species.

But has Mr. *Mills*, gentlemen, any such intention? It seems he has directly the contrary: for, in page 291, line



line 22, &c. he tells us, that Mr. *Rocque's burnet* is, in his opinion, the *pimpinella sanguisorba* of Mr. *Ray*, one of whose two species, viz. *pimpinella sylvestris major sanguisorba*, great burnet, is *Miller's* first species of the *sanguisorba*. This is indeed curious! If Mr. *Mills* has not time to clear up this point to us while he is engaged in the *sequel* of his work, he will, I hope, in some subsequent edition, be so good as to make the assertions appear more reconcileable.

I am, GENTLEMEN,

In the mean time,

Your frank correspondent,

East-Newton,  
July 15, 1764.

THOMAS COMBER, Jun.

P. S. Since I finished the above letter, gentlemen, I have had the curiosity to look what the skilful old *Parkinson* says on this subject; and I find, that "*pimpinella* hath a double interpretation, declaring two sorts of herbs; for it either signifieth *burnet*, and then it is usually also called *sanguisorba*; or it is referred to the *saxifrages*, and then it is called *pimpinella saxifraga*, burnet saxifrage," page 582. He then proceeds to describe the species of the *burnet*, and gives both to the, I. *Pimpinella vulgaris* five minor, II. *Minor inodora*, and III. *Major* five *sylvestris*, round loose heads or knaps, on long foot-stalks, of a brownish colour, putting forth purplish seeds; with no difference, as to form, but that the greater species has the heads, &c. larger than the smaller species.

The same excellent botanist, in page 946, describes the *pimpinella saxifraga* as having an umbell of white flowers, and pretty well agreeing with the rest of the description which Mr. *Mills* gives of the *burnet*. Upon the whole, I am much afraid that Mr. *Mills* has involved himself in a contradiction, which he can never render consistent,

sistent, and which it would be the most generous and prudent method to *acknowledge* and *correct*: for, if he will have the *burnet* of Mr. *Rocque* and the society to be the *pimpinella sanguisorba*, it agrees neither with the description of the *leaf*, nor the *flower*, which he gives under the article *burnet*: and, on the contrary, if he will have it to be the *burnet saxifrage*, his description, both of leaf and flower, agrees very well with the original; but then it is not the *pimpinella sanguisorba*, but *saxifraga*. I have dried specimens of both by me, and a bare inspection is sufficient to satisfy any reasonable man: and I am now able to answer some of the queries I put in the above letter, if not all of them, *viz.* that *saxifrage*, and *burnet saxifrage*, are the same plant; that the *burnet* differs from the *saxifrage* very greatly, its leaf being *indented* much like a rose-leaf, but not near the *mid-rib*, (as that of the *burnet* is) and greatly resembles a carrot; and its flower is *small* and *white*, whilst that of the *burnet*, proceeding from a *brownish* head, is *long* and *purple*. There is no probability that the *saxifrage*, or *burnet saxifrage*, which seems now to be regarded alone as the *burnet*, ever bears a brownish flower; such arising only from the confusion of two species of plants in themselves different. And here, gentlemen, one cannot avoid remarking the transition of *human things*.

Names are given to *distinguish things*, and yet, by unperceived degrees, they lose their propriety, and become a source of *confusion*. How the *saxifrage* gained the addition of *burnet*, is hard, if not impossible, to say: it has, however, now so effectually fixed it to itself, that it has thrown away its former name, and is known only by its *agnomen*, *burnet*; whence two species of plants, which one would have thought very unlikely to be confounded, are at war about a name.

Your correspondent E. L. and Mr. *Mills*, appear now to mean the same plant; and their observations from Mr. *Worlidge* about its excellence for milk-cows are, I hope, well founded, and will greatly recommend the culture of  
*burnet*.



*burnet*. I am, gentlemen, in general, very unsollicitous when my letters to you appear in print: but as I think I have been *lucky enough* to clear up a scene of *confusion*, in which many of your readers, as well as myself, must have been involved, I really wish that you could give a place to this letter in your first publication\*. The specimen of *burnet*, which I saw this summer in the garden of a person who is well acquainted with Mr. *Rocque*, agrees very well with the *saxifrage*, and is, doubtless, the same.

If you desire, I will send you either a drawing of the *burnet* and the *saxifrage*, or specimens of the originals. If *plants* could speak, they might say of their names, (as a philosopher did of the goods of *Fortune*) “*Vix ea nostra*” “*voco*.” The name *tragoselinum* appears not in *Parkinson*. It seems, according to its derivation, to signify that this plant, a species of the *parsleys*, is much liked by goats. *Parkinson* says, that *Tragus* recommends it as *hotter* than any of the *parsleys*, (as hot as pepper) and *wholesomer*. I have in my letter on *saxifrage* suggested that it may be good for milch cows, as it *clears obstructions*, and *promotes drinking* †.

N. B. Pray correct the following *errata* in my letters. In page 263, line 31, Vol. II. for “his ground for the “arable present year,” read “his arable ground for the “present year;” and, in page 267, line 22, for “I am “afraid,” read “I am assured.”

\* We hope Mr. Comber will esteem our complying with his request as soon as possibly we could, as an instance of the desire we have to oblige him. His letters will always meet with a good reception. E. O.

† If Mr. Mills should be inclined to answer any of the circumstances mentioned by Mr. Comber, we shall very readily afford a place, in our collection, for his letters: this offer we are naturally induced, by our impartiality, to make. E. O. R.



## NUMBER VII.

*Description of a Drill for sowing Beans, &c. and of a triangular Harrow, both now in Use in the Vale of Aylesbury.*

GENTLEMEN,

**A**MONG many other very useful leading questions in your First Number, I find the following: *In what manner might the drill-plough, by being made less complicated, be brought into general use?* I have long wished to see an answer to it, and am the more surpris'd that none has been given, as there are two sorts of drills now in use in the vale of Aylesbury, in that part which lies between Aylesbury and Tame; both which are very simple in their construction, and may very easily be made to sow wheat, as well as beans, for which only they are now used.

One sort of these drills is made upon Tull's principles, though not exactly according to his plan. It consists of a single drill-box: the cylinder is about four inches diameter, and has nine or ten holes to turn out the beans, like the other, of which I have given you a description. The wheel is twenty inches diameter; it is fixed to the plough-beam by hinges; and the beans drop a little before the coulter, so that they are immediately covered by the earth from the broad board.

The inconvenience of this drill is, the time lost in turning it over the plough-beam at the end of the land, and that the team must stand still while the drill-box is filling with beans. These impediments, upon a moderate computation, hinder about a quarter of a day's work.

Therefore, I prefer the other sort of drill, which is made like a wheel-barrow; a draught and description of which I have here sent you.

A man drives it up the furrow just before the plough: but as I think I have a little improved upon the common method of cultivating drilled beans, and as it perfectly  
answers

answers my expectation, I have here sent you my method in as few words as possible.

First, I plough two furrows on each outside of the land, but sow no beans in them: I afterwards drill the three next furrows: then I plough two furrows without drilling any beans in them, and so on, sowing three, and leaving two, for intervals, till the land is finished.

When the beans are about two or three inches high, I plough two furrows up each interval, turning the furrows from the beans, so as to make a ridge in the middle of each interval. I have a little plough on purpose for this use, about half the size of a common plough, which is drawn by one horse.

This work should be done after a rain. This year, on the fifteenth of May, we had rain. I therefore went to plough in the intervals on the eighteenth, and continued at plough till all were finished. On the eighth of June we had rain again. On the ninth of June I went to harrow the intervals, with the triangular harrow, as *per* plan. About a week after that we had more rain. I then went to harrow again, going up the interval I went down before, and down that which I went up: this is what we call *cross tining*. Thus my land is laid quite smooth; it is kept clear from weeds; and the beans have a fine loose mould to strike their fibres into; and it is by far the cheapest way of weeding beans.

If this meets with your approbation, and obtains a place in your valuable collection, I shall think myself very happy in having been, in some degree, serviceable to my country; and perhaps you may hear again \* from,

Your most obedient, humble servant,

J. L.

\* We shall always be glad to hear from this correspondent, and should take it as a particular favour if he would, in a future letter, describe to us the manner in which beans are sown in the vale of Aylesbury. N.



*The Proportions of the Drill are as follow.*

Diameter of the iron wheel, twenty inches.

Length of the box, from A to B, twenty inches.

Breadth of the box, from B to C, ten inches.

Depth of the box, from C to D, five inches and a half.

Diameter of the cylinder of wood upon the iron axis of the wheel, four inches. *This cylinder, you may see, turns out the beans regularly.*

Length of the cylinder, two inches and a half. *On this cylinder are twenty-one holes, a quarter of an inch deep, and half an inch diameter.*

E, is a tongue which drops upon the cylinder, and plays up easily: the tongue is half an inch thick, seven inches long, and one inch and three quarters wide. *When a larger bean than ordinary comes, it will throw the tongue up, which naturally recovers its place again; and so the work goes on well and even.* The tongue is represented with its notch at E: the notch does not go quite through it: it falls exactly upon the holes of the cylinder.

A lid takes off to put the beans into the box, and buttons down at F.

#### *The Harrow.*

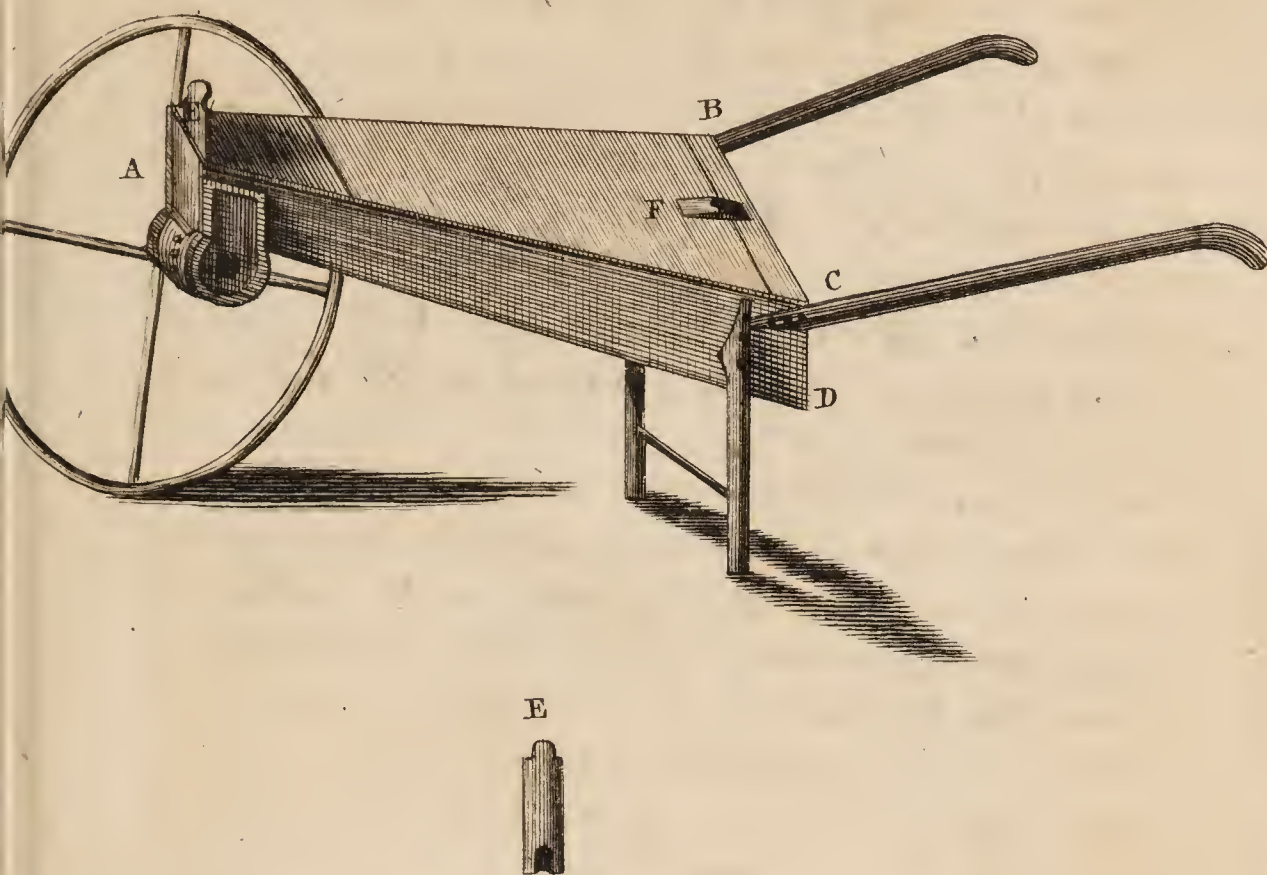
From A to B, eighteen inches.

The tines nine inches apart.

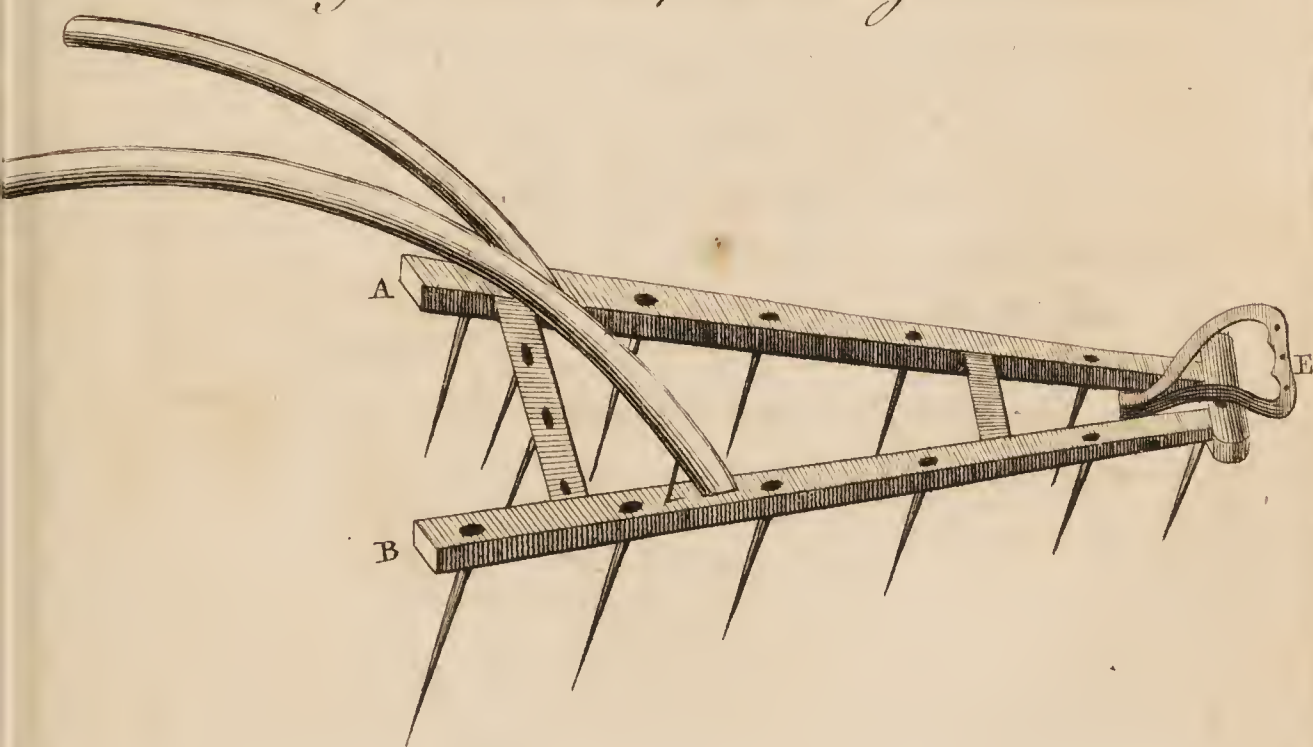
The three tines in the cross-bar are only three inches and a half apart.

E, a cock, which plays upon a pin, in which are three holes to hang the whipple-tree in. *If you put it into the upper hole, the tines bear very hard upon the ground: I generally use the middle hole.*

*A Drill for sowing Horsebeans.*



*A triangular Harrow for weeding Horsebeans.*









## NUMBER IX.

*An Account of Receipts and Disbursements from the Institution of the Society for the Encouragement of Arts, &c. Anno 1755, to December 31, 1763.*

R E C E I V E D		1755.	1756.	1757.	1758.	1759.	1760.	1761.	1762.	1763.	Total.
		<i>l. s. d.</i>	<i>l. s. d.</i>	<i>l. s. d.</i>	<i>l. s. d.</i>	<i>l. s. d.</i>	<i>l. s. d.</i>	<i>l. s. d.</i>	<i>l. s. d.</i>	<i>l. s. d.</i>	<i>l. s. d.</i>
By Subscriptions — —		360 19 0	632 2 0	1203 3 0	1731 9 0	2001 6 0	3482 17 0	3656 4 0	4533 18 0	4614 15 0	22216 13 0
Int. on Governmt. Securities			3 0 0	15 11 0	0 0 0	0 0 0	0 0 0	20 11 6	20 0 0	20 0 0	79 2 6
Bal. from the preceding Year	£.	360 19 0	635 2 0	1218 14 0	1731 9 0	2001 6 0	3482 17 0	3676 15 6	4553 18 0	4634 15 0	22295 15 6
		0 0 0	132 10 7	439 13 7½	1154 4 6	2128 17 6	2816 13 3	3636 17 9½	3841 8 9½	2602 17 2	
	£.	— — —	767 12 7	1658 7 7½	2885 13 6	4130 3 6	6299 10 3	7313 13 3½	8395 6 9½	7237 12 0	
P A I D											
Polite Arts — — —		45 0 0	62 18 6	104 0 0	42 5 0	305 19 6	565 2 11	642 13 0	910 17 5	949 19 1	3628 15 5
Agriculture — — —		30 0 0	0 0 0	54 0 0	26 5 5	63 7 3	6 19 3	59 1 9	15 17 4	608 2 8	863 13 8
Manufactures — — —		23 8 0	0 0 0	63 15 11½	100 0 0	182 12 0	100 10 0	49 7 10	183 17 6	177 9 8	881 0 11½
Mechanics — — —		0 0 0	0 0 0	50 0 0	51 0 0	6 16 0	140 10 0	549 7 5	414 9 2	475 1 5½	1687 4 0½
Chemistry — — —		0 0 0	25 2 1	13 1 0	23 12 6	101 0 7	4 5 6	172 10 9	85 13 6	107 10 6	532 16 5
Colonies — — —		36 0 0	0 0 0	0 0 0	0 0 0	85 0 11	138 4 9¾	211 8 5½	20 0 0	411 15 6	902 9 8¼
Exhibition — — —		0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	49 16 0	111 13 1	129 3 10	290 12 11
Rent — — —		10 0 0	38 12 6	36 15 0	27 16 6	50 8 0	170 0 0	200 0 0	129 13 0	99 10 9	762 15 9
Salaries and Allowances —		16 16 9	80 17 0	75 0 0	137 10 0	150 0 0	367 11 11¼	381 7 6½	506 6 7½	501 7 3	2216 17 1¼
Advertisements — —		11 16 6	14 4 6	15 17 0	32 19 6	54 8 0	51 3 6	81 15 0	124 2 0	43 7 6	429 13 6
Printing and Stationary —		11 11 0	34 13 2	35 10 8	41 17 2	72 18 3	96 1 1	146 4 0	138 3 7	31 19 10	608 18 9
House Expenses — — —		0 0 0	11 18 0	7 10 0	3 18 4	10 6 3	72 13 11½	76 3 7	81 5 0	49 1 11	312 17 0½
Furniture — — —		13 14 6	35 12 9	0 0 0	3 12 10	34 16 6	446 0 9	88 12 7	20 14 4	37 17 11	681 2 2
Repairs — — —		16 17 11	15 7 6	2 13 8	6 17 2	22 10 8	470 12 2	170 5 8	22 14 4	44 3 0	772 2 1
Contingent Expenses — —		13 3 9	8 12 11½	45 19 10	259 1 7	173 6 4	32 16 7	93 10 11	27 2 9	24 16 1	678 10 9½
Land-Carriage Fish Plan —		0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	500 0 0	3000 0 0	7 3 2	3507 3 2
Balance remaining	£.	228 8 5	327 18 11½	504 3 1½	756 16 0	1313 10 3	2662 12 5½	3472 4 6	5792 9 7½	3698 10 1½	18756 13 5½
		132 10 7	439 13 7½	1154 4 6	2128 17 6	2816 13 3	3636 17 9½	3841 8 9½	2602 17 2	3539 2 0½	
	£.	360 19 0	767 12 7	1658 7 7½	2885 13 6	4130 3 6	6299 10 3	7313 13 3½	8395 6 9½	7237 12 2	





## NUMBER X.

*Method of weeding Wheat by means of a Flock of Sheep.*

GENTLEMEN,

GIVE me leave to mention to you a practice which, however, I do not absolutely recommend, though with me it succeeded, and, as I have been informed, has done so with several other farmers, who have ventured to make the experiment.

A few years ago, after what I thought a good fallow, I sowed a field, containing five acres, with wheat. The soil was a good loam, but rather light than stiff, and inclined to be stoney. The wheat plants looked healthy during the whole winter, and promised fair to yield me a plentiful crop; but in the spring, warm rains coming on brought such store of weeds, that my wheat was in danger of being choaked.

I was for some time puzzled what to do; for it being now the latter end of May, and the wheat being on the spindle, and some even in the ear, to weed it with hooks would have been endless, not to mention the damage that would have been done to the plants by the weeders feet.

I had at one time thoughts of mowing wheat and weeds all together, and drying them to make fodder for my cattle, intending, if I had done this, to have got the land as fast as possible in order, and sown it again with wheat the succeeding autumn.

However, in looking over the field, I found no great deficiency of wheat plants; but they were in most places so over-topped by the weeds, as to be scarcely visible, and in the furrows, in particular, not a blade of wheat was to be seen.



My method of ploughing for wheat-feed in this land is, to make narrow fitches, but wider than a ridge, and more rounding, being not so sharp on the back.

Whilst I was meditating what to do in this matter, a gap was by some accident made in the hedge, and a parcel of my sheep got into the wheat field.

As soon as I saw where they were, apprehending great damage, I ordered them to be immediately driven out, and the gap mended.

On taking a survey, I was not a little surprised to find that the sheep, instead of doing any damage to the wheat, had done it a great deal of good, for they had eat up almost every weed which grew in that part of the field next to the pasture.

Encouraged by this accidental discovery of a propensity in sheep to eat weeds rather than wheat, I turned a hundred of my flock, into the field, two or three hours in the morning and the evening, for several days together, till all the weeds were nearly consumed.

On inspecting my field afterwards, I found the sheep had done very inconsiderable damage to the wheat, but the weeds were eat down so close that they could never again get a-head; the wheat going on prosperously, and yielding me at harvest a plentiful crop of clean, good corn, which was more than any of my neighbours could that year boast of.

Whilst the sheep were eating the weeds, I found they mostly walked in the furrows, as being easier to their tread than the sloping sides of the narrow fitches; and this might be one reason of their doing the wheat so little damage by their treading.

In this new method of husbandry I took, however, one precaution, which, I am apt to think, greatly contributed to my success.

The precaution I mean is, that I never let them lie in the fields at night, as the weight of their bodies when they lay down to sleep could not have failed doing great damage to the plants.

I send

I send you this for the consideration of your intelligent readers: recommend it I dare not \*, as it may appear a hazardous practice, and as I own I never yet saw it adopted by any of the farmers in my neighbourhood.

I am, GENTLEMEN,

Your constant reader,

And humble servant,

Warwickshire,

June 23, 1764.

E. F.

## NUMBER XI.

*To the Editors of the MUSEUM RUSTICUM.*

*Remarks on Mr. Jeremiah Brown's Method of making Salt-Petre. (See Numb. X. Vol. I.)*

GENTLEMEN,

**T**HOUGH Mr. Brown's method of making salt-petre in Virginia may at first sight appear to be very different from the common methods prescribed by our chemists, yet, upon a nearer view, I apprehend it will be found to be pretty similar to some processes already laid down: I shall endeavour to give you a proof of this; and at the same time a rationale of his process, which may, perhaps, strike some new lights into this very interesting subject.

Let me first premise, that the experiments of Mr. S. M. and the ingenious Dr. Lewis, which, in my opinion at least, have authenticated Mr. Brown's salt-petre to be

F 2

genuine,

\* We approve of our correspondent's caution, in not absolutely recommending this practice, through a fear of its not succeeding with others, so well as it has done with him: yet was this caution in some sort unnecessary, as the practice of turning sheep into wheat, just before it spindles, to eat up the weeds, is, we are informed, almost universally adopted in several parts of Somersetshire, particularly about Pensford, Keynsham, Brislington, and the places adjacent, in the neighbourhood of Bath and Bristol; and there they keep the sheep constantly moving, to prevent their lying down on the corn. We could wish our correspondent had told us the names of the weeds which infested his wheat. E.



genuine, have been my chief motives for taking this affair under consideration.

Stayll tells us, that *if any bitter herbs be boiled in urine, and the decoction poured upon a shaded piece of ground, nitre will hereby be produced.* Now, tobacco, as I take it, is one of the most bitter herbs of which we have any knowledge; and if *ambeer*, the composition of which I am a stranger to, should prove to be nothing more than an infusion of this herb suffered to grow putrid, it will readily, I hope, be allowed, that this new method is not very dissimilar from Stayll's.

This great man further says, that *nitre is a salt composed of an oily saline volatile, mixt, for its essential part, with the concurrence of a very subtile alkaline earth; that the earth, where any animal substances and excrements have been deposited, being dug up, and steeped in warm water, communicates its nitrous part thereto.* It is observable, that he here mentions nothing of putrid vegetables, which other writers hold to be so very essential to the production of nitre, and which, in Mr. Brown's method, are the only instruments employed. But, if what our chemists in common relate be true, that all animal and vegetable substances by putrefaction are resolved into the same elements, the matter does not seem to be of any importance, farther than it may usefully lead us to conclude, that *ambeer* may be made of rotten flesh, as well as rotten tobacco. But to go on with Stayll.

He says, that *a solution of the earths above mentioned being boiled till a drop of the decoction will, upon cold iron, congeal into a softish saline substance, the whole quantity, being drawn off and set in a cool place, will coagulate into clear and regular shoots.*

Glauber has likewise a method of preparing nitre from clay frequently drenched with urine, or some other putrid liquor; but referring us to time to finish the process, we have paid no more regard to this process than to an hundred others, where a length of time hath been thought necessary to complete them.

Before



Before I conclude, I shall take this matter into consideration, and hope to demonstrate, that the time which has been so constantly required for the production of nitre may very reasonably be abridged, as Mr. Brown, in fact, has done, though without assigning any reasons for it; to whose process we now come.

In our Virginian process we find no fixed alkaline salts are employed, nor any putrid matters, except what is called *ambeer* may be of this nature. I do suppose it, indeed, to be an infusion of the rotten and decayed leaves of tobacco, and so far to be of a putrid nature\*. If so, this process, as I before observed, will be of a very similar nature to *Stayll's*.

He directs the clay floor, not only to be sprinkled with strong *ambeer*, but likewise to be covered with wet ground-leaves, or other tobacco trash, for a fortnight; the use of which must necessarily be, to keep the floor moist for that space of time, and perhaps to promote a fermentation of the liquor. The trash is afterwards to be swept away, and the floor left to spew out its nitre, or what he calls the nitre which it has attracted; though, I apprehend, the nitre here attracted, and condensed like hoar-frost, is nothing more than the saline oils that had been imbibed by the clay, and by the means of this clay concreted, and perhaps neutralized, with some assistance from the air.

“ This saline earth, *I observe*, being swept off, is to be made into a ley, but not too strong, lest it should be overcharged with *saline* particles.” I apprehend he should have said *oily* ones, which, doubtless, would impede the shooting of the salts that are in it. The reason of putting warm water to this earth at first, must be to thin or dissolve those oils, which, being commonly in too large a quantity, I should think stood in need of no heat to dissolve them.

The

\* The true composition of *ambeer* is requested from those who know it. J. M.



“ The water, which must be in the proportion of near eight gallons to a bushel of the earth, will soon drain through it, and, if the first running is foul, must be returned upon the earth till it comes off clear; and as soon as you have got a gallon of this liquor, you may begin to boil it gently away till your pot is fully charged with a thick cream-like substance, a spoonful of which being put into a cool place will shoot, if not too thick, into small icy crystals; if too thick, you must add some cold water too it: when the whole is of a proper consistence, it must be drawn off into shallow trays, set in the cold, and the salts suffered to shoot. The ley is then to be poured from the salts, in order to be boiled over again, and the salts reserved to be refined, as is hereafter mentioned.”

I observe, here are no calcarious earths employed, except such as the ambeer may extract from the clay floor; nor any fixed alkaline salts, though the nitre here formed may, by the common process, be converted into a fixed alkaline salt as soon as any other nitre. We come now to Mr. Brown's second process.

“ Fill your pot, *says our author*, one third full of the nitre which you have got from your first work, and as soon as it begins to melt, it will boil furiously: keep it well stirred down with an iron rod, as at this time it is very apt to take fire (owing, I presume, to its oily parts). When you observe in the boiling it looks like a dirty white, slacken your fire, and stir it briskly for a quarter of an hour; then encrease your fire, and continue stirring, though the danger of firing is now over. In process of time the matter will appear like boiled cream, and must be poured on a stone floor. When cold, it will ring like china.” The nitre of the first work, I apprehend, being overcharged with volatile oils, is, by this second operation, freed, in a great measure, from them, which perhaps might as well be done, though not so soon, by laying the cream-like substance in a hot stove, where the volatile oils would gradually fly off without danger of firing. When

these oils are boiled, or rather roasted away, we find a nitrous earth left, from whence the pure nitre is to be obtained by a third operation.

It is obvious, from this second operation, that, though Mr. Brown's ley, or lixivium, is ordered to be perfectly clear before you begin to boil it away, yet there is a considerable deal of earth in it; otherwise, how should it, when it has gone through a sufficient degree of heat, ring like china? or how should it, as will be found in the third operation, let fall an earth? Now this earth must certainly be suspended by the oils which are in the ley, or, it may be, are the proper earth of these oils (for all oils contain an earth); and if these oils, as well as this earth, could be separated from the ley before boiling, much trouble must necessarily be saved, even the entire second operation.

“The dry earthy cakes, which you obtained from your second operation, must now be pounded; and to every pound of this earth you must put six gallons of water; and as soon as the substance is dissolved, the earthy matter will fall to the bottom. The clear liquor is then to be drawn off, and gently evaporated to a pellicle, then put into shallow trays to crystallize into refined nitre.”

The whole process seems to me to be capable of great improvements, of which, in a second letter \*, I may farther descant. In the mean time I remain,

GENTLEMEN,

Your humble servant,

Manchester,  
July 13, 1764.

J. M.

\* The sooner we hear again from this gentleman, the more agreeable it will be to us. N.



## NUMBER XII.

*Experiments ascertaining the comparative Weight of the Grains, Chaff, and Straw, of a Crop of Wheat; with some valuable Hints towards attaining heavier Crops; concluding with a Recommendation of the new Husbandry.*

GENTLEMEN,

**Y**OUR correspondent, in the letter marked No. LXI. page 175, Vol. II. gives some curious experiments for finding the mean weight of wheat, in order, as he says, to prevent the farmers from enhancing the price of it. These experiments were begun in the year 1757, when wheat was at an excessive high price; and the design of this gentleman, to prevent, or defeat, the practice of engrossing it, is highly commendable.

But as it is necessary that wheat, in plentiful years, should be stocked somewhere for a supply when the crops fall short, it is better for the poor to have it at first hand than of other dealers in corn, loaded, as it must then be, with large additional expences. If we had public store-houses for corn, it might be kept to a more equal price, and the farmers would have a market for it when cheap: but while there is no such provision, it may be a question, whether it would be good policy to lay restrictions upon the raisers of corn, as that might discourage agriculture, and create a real scarcity.

The experiments made by your ingenious correspondent are very accurate, though, in my opinion, much too small to determine matters of such importance: but he has, I think, fallen into a mistake that I also did in trying some experiments upon wheat, *viz.* in supposing that a middling ear is a standard for computing the crop. This, indeed, would be the right rule, provided there was a regular gradation in the ears above and below the middle size: but, in fact, it is otherwise; there are generally more small ears than large ones, and yet the corn in the large ears may weigh most.

To

To explain this, let us suppose a person going to choose some middling ears as they stand in the field: he must do this either guessing by his eye, or by measuring some of the different sizes, and taking those of the middle size as near as he can. The sizes can only be determined by their length and fullness: and if, for example, the longest are five inches, and the shortest one, the medium is three inches. Now, though those of three inches are undoubtedly the middle size, yet, unless the weight and measure of the corn in the ears below three inches are equal to that of the ears above that size, the calculation of the crop from the three-inch ears will be wrong. This will be seen in the following tables.

I once took an account of great part of a sheaf of red Lammas wheat; but having mislaid my notes of it, I shall at present take notice chiefly of an experiment made upon white Lammas wheat, of the crop 1762. The ears and straw of this crop were in general very short; but the corn was remarkably fine, full, and heavy. The wheat of this experiment was raised upon clover lay, and the crop about twenty bushels upon an acre. A nine-gallon bushel of this wheat weighed above seventy pounds avoirdupoise, which is usually reckoned the full weight of good wheat, though some will weigh more, as the best generally did that year.

In February, 1763, I took some of this corn out of a middling sheaf, and, as near as I could, of the middle-sized corn: but it was taken out all together, and, without separating of it, I sorted what was thus taken out, into four parcels, nearly according to the length of the straw, in order to discover the proportion between the ears and straw of different lengths; but there seems to be little certainty in this.

These four parcels were weighed separately, ears and straw together; then the ears by themselves; and, last of all, the corn when separated from the chaff.

I weighed twenty of the first parcel by themselves, that had the longest straw, and longest fullest ears; and afterwards weighed them singly, taking the weight and measure of each, as in the table.



Being desirous to know the weight and produce of the ears of different lengths, I sorted each parcel according to the length of the ears, differing one from another about half an inch; and I weighed these subdivisions separately, noting the length of the ears, and the number of chests and grains in each. The length of the ears was measured from the bottom of the lowest chest that had any corn in it, to the top of the ear. The longest ear was three inches and a half, but there being only one of that length, it is included among those of three inches and a quarter. The twenty ears first weighed are included in the sixty-three large ears in this last weighing.

Several ears have some very small grains in them: these are set down in the table, but not reckoned in the weight, because I supposed them not marketable, and that they would go to the tailing, or off-fall corn. Of these small grains two thousand one hundred and eighty-seven weighed an ounce averdupoise. The rest were weighed by troy weight, as below.

*The Weight of the four Parcels.*

		oz. dw. gr.
250 of the longest	(the straw 28 to 36 Inch.)	18 18 4
500 of the second size	24 to 32	26 17 16
250 of the third	20 to 26	11 7 20
250 of the fourth	16 to 22	5 4 18
1250 ears with the straw		62 8 10

*Twenty, with the longest Straw, and longest fullest Ears, weighed singly,*

	Inches.	Chests.	Gr.		oz. dw. gr.
1 ear	$3\frac{1}{2}$	20	40	The corn in these twenty ears wd. }	1 2 12
1 do.	$3\frac{1}{4}$	18	41		
1 do.	$3\frac{1}{4}$	17	39		
1 do.	$3\frac{1}{4}$	17	35		
1 do.	3	16	34		
1 do.	3	17	35	The chaff — —	0 5 15
1 do.	3	17	34	The straw — —	1 0 21
3 do. each 3	3	17	101	The ears and straw	2 9 0
10 do. each $2\frac{3}{4}$ 15 to	$2\frac{3}{4}$ 15 to	17	325		
20 ears		333	684	= 34.2 grains in each ear upon a medium.	

In the first of the following tables are inserted the assortments of the four parcels, by the length of the ears, with the number of chests and grains in each, and the separate weight of the ears, grain, and chaff. I must observe, that by accident I missed taking the distinct weight of the two hundred and fifty smallest ears: they are set down in the table as I computed them, in proportion to the third, or preceding parcel, which may differ a little from the real weight; but this cannot be much, for the weight of the whole parcel is right.

In the second table, the length, weight, &c. of the twenty largest ears, are set down in the first line: in the second line are the sixty-three large ears, including these twenty: and the third line contains the two hundred and eighty-eight smallest ears. They are set thus together to give the more easy comparative view of them. The next three lines of this table shew the weight, &c. of all the middle-sized ears, and of all those above and below the middle size, brought thus together also by way of comparison. To these I have added, in the following columns, a calculation of the number of chests in each assortment of ears, and the mean number of grains in each chest; also, the number of grains, and weight of a mean ear, of each assortment.

The last table shews the total weight of the corn, chaff, and straw, upon an acre, agreeable to this experiment, reckoning the crop at twenty bushels of nine gallons, or seventy pounds, averdupoise, *per* bushel.

The very small grains are not reckoned here, for the above reasons; and that the waste in reaping, carrying, threshing, and some left in the straw, is more than they amount to. But by adding them, and allowing for about seven or eight inches long of stubble, the total weight of the crop may be nearly estimated.



## MUSEUM RUSTICUM

A Table of the Length, Weight, &amp;c. of One Thousand Two Hundred and Fifty Ears, sorted according to their Length.

Eare No.	Length. Inches.	Chefts. No.	Grains. Gr. Sm.de.	Wt. of Ears. Oz. Dw. Gr.	Wt. of the Grain. Oz. Dw. Gr.	Wt. of Chaff. Oz. Dw. Gr.	Wt. of Straw. Oz. Dw. Gr.	Total Weight. Oz. Dw. Gr.
20	$2\frac{3}{4}$ to $3\frac{1}{4}$	15 to 20	684	1 8 3	1 2 12	0 5 15	1 0 21	2 9 0
7	$3\frac{1}{4}$	16 18	215	0 8 3	0 6 9	0 1 18	} 7 11 16	
11	$2\frac{3}{4}$	15 16	300	0 11 21	0 9 5	0 2 16		
80	$2\frac{1}{4}$	14 15	1930	3 13 10	2 17 13	0 15 21		
85	2	11 14	1600	2 18 18	2 5 6	0 13 12		
47	$1\frac{3}{4}$	9 12	738	1 5 8	0 19 18	0 5 14		16 9 4
250			5467	10 5 15	8 0 15	2 5 0	8 12 13	18 18 4
8	3	17 18	265	0 10 12	0 8 8	0 2 4		
17	$2\frac{3}{4}$	14 16	443	0 17 9	0 13 4	0 4 5		
108	$2\frac{1}{4}$	14 15	2405	4 4 9	3 8 13	0 15 20		
164	2	11 14	2925	5 2 14	4 0 0	1 2 14		
203	$1\frac{3}{4}$	9 11	2727	4 10 0	3 10 0	1 0 0		
500			8765	15 4 20	12 0 1	3 4 19	11 12 20	26 17 16
40	$2\frac{1}{4}$ to $2\frac{1}{2}$	13 16	827	1 10 12	1 3 13	0 7 0		
65	2	10 13	1075	1 15 15	1 7 14	0 8 0		
107	$1\frac{1}{2}$	8 10	1350	2 1 13	1 12 17	0 8 20		
38	1	6 7	293	0 8 19	0 6 19	0 2 0		
250			3515	5 16 11	4 10 15	1 5 20	5 11 9	11 7 20
250	$\frac{3}{4}$ to $3\frac{1}{4}$		1622	2 13 13	2 1 16	0 11 21	2 11 5	5 4 18
1250			19399	34 0 11	26 12 23	7 7 12	28 7 23	62 8 10

## A comparative View of the above One Thousand Two Hundred and Fifty Ears of Wheat.

	Ears. No.	Length. Inches.	Grains. No.	Wt. of Grains. Oz. Dw. Gr.	Chests. No.	Grains per Chest.	Grains in a mean Ear.	Weight of a mean Ear.	Grains Troy.
Largest	20	$2\frac{3}{4}$ to $3\frac{1}{4}$	684	1 2 12	333	2.054	34.2	27.000	
Large	63	$2\frac{1}{4}$ to $3\frac{1}{4}$	1907	2 19 14	1012	1.884	30.269	22.696	
Smallest	288	$0\frac{3}{4}$ to $1\frac{1}{4}$	1914	2 8 10	2016	0.949	6.645	4.034	
Large	291	$2\frac{1}{4}$ to $3\frac{1}{4}$	7069	10 9 5	4318	1.637	24.292	17.288	
Medium	314	0 to 2	5600	7 12 20	3849	1.454	17.834	11.681	
Small	645	$0\frac{3}{4}$ to $1\frac{1}{4}$	6729	8 10 21	6199	1.085	10.432	6.358	
Total	1250	$0\frac{1}{4}$ to $3\frac{1}{4}$	19399	26 12 23	14366	1.35	15.519	10.232	

Total Weight of the Crop upon an Acre, agreeable to the above Specimen, reckoning the same at twenty Bushels of nine Gallons, or seventy Pounds per Bushel.

Wheat.		Chaff.		Straw.		Total Produce.	
C.	q. lb.	C.	q. lb.	C.	q. lb.	C.	q. lb.
12	2 0	3	1 23	13	1 7	29	1 2



Small experiments are not so satisfactory as large ones ; and I could wish this had been more extensive, but I had no thoughts of offering it to public view till I read your correspondent's letter, who has, I apprehend, gone upon a wrong rule in computing a crop, and has also chosen the mean ears too large : for, though the ears of red Lammas wheat are usually longer than the white, it cannot be supposed that, upon an average, they are above double, both in weight and number of grains, as we find those were to the mean ears of this experiment. Neither is it at all probable, that the mean ears of the common crops in any part of England, and in the same year, should be heavier, and contain more grains in them, than the very largest ears of this experiment.

The ears of this wheat being from three and a quarter to three quarters of an inch in length, the medium is two inches. I have ranged all these together in the second table. They are a fair medium in regard to length ; and they are so also as to fullness, because they are all included : but, as appears in the table, they are not so in respect to the weight of the grain, which is the rule for the medium of the crop ; for the small ears are more than double the number of the large ones, and yet the large ears are the heaviest. If, in order to make the number of ears equal, we choose the mean ears shorter than two inches, the inequality of weight will be greater than before ; and if we take our medium higher than two inches, the weight may be made equal, but this will encrease the disproportion in the number ; and hence I think it is evident, that we cannot fix upon any size of ears that will give us a just medium of the crop. The same will happen in other crops, for they all vary one from another in the size and number of ears : and, as we cannot be certain of their real proportion as they stand in the field, it is impracticable to calculate a crop from those of any size.

The calculation of a crop from a mean ear is made by multiplying the weight of grain in that ear by the number of ears upon an acre. A mean ear of this experiment weighed,

weighed, as in the table, 10.232 grains troy, and the crop was about twenty bushels upon an acre. Your correspondent reckons the weight of a mean ear at 24.05 grains troy, upon an average of seven years; so that, reckoning the same number of ears upon an acre as in this experiment, his crops will amount annually to forty-seven bushels *per* acre, of seventy pounds, averdupoise, *per* bushel. These are such crops as, I suppose, no considerable extent of contiguous lands in England produce annually; and are, doubtless, more than double the common crops upon an average.

The disproportion in the number of small and large ears is very remarkable, and also their disproportion in size: for, if we calculate from the twenty largest, we shall find that forty-three of them weighed as much as all the two hundred and eighty-eight small ones, *viz.* one large ear produced as much corn as seven small ones, and the grain in them also larger, and consequently more flour in them: for one hundred of the large corns weighed seventy-eight grains troy, and one hundred of the small but sixty grains; so that four grains of the large ears were heavier than five of the small. This great difference is not from any defect in the rudiments of these small ears, but is occasioned principally from bad culture, and a defective nourishment; because we see that the plants raised from the same seed will have larger or smaller ears, according as they are cultivated. It might, however, be useful to know at what period of their growth those small ears are stunted, and whether they are produced from the original plant, or from the tillers. I am not furnished with experiments to determine these points, but recommend them to the enquiry of your readers.

It is certain that the ears of wheat, in general, do not arrive to the size that they are naturally capable of: and if it was known at what period they are formed, the stinting of them might, in some degree, be prevented, by a dressing, or other culture, at that period. That there is some such period in nature, may appear from other circumstances in the growth of this plant. There is a particular



particular season for its tillering, or spreading; another for its upright growth; and one for its blossoming and forming the seed; and probably one also for the ear being formed: and the growth of it, in respect to each of these, may be promoted by culture, or retarded by a defect of nourishment, at these periods.

When the season of tillering is past, no culture will make the plant throw out more branches; and after the ear is shot out, it is then impracticable to make it larger, *viz.* to encrease the number of chests. Again, when it has blossomed, no art will cause the stem to rise higher. And, last of all, after the time of blossoming, there is no adding of one grain more than is already formed in the ear; though, in all these cases, an addition, or improvement, may be made by culture, if applied at the proper time.

It is therefore of importance to know the periods of growth of the different parts of the plant; and that if we happen to miss assisting of it in one, we may improve it in another. If the season is lost to encrease the number of tillers, we may enlarge the ears; or, if that is also omitted, we may encrease the number of grains in the ears, and make them larger, and fuller of flour.

To shew this more plainly, with respect to the grain, let us a little consider the structure of an ear of wheat. The grain is placed in a cell, consisting of two valves, or leaves; and there is one leaf extraordinary on each outside of the chests, which seems intended as a fence, or security, against accidents to the outward grains. The chests about the middle of the ear are the largest, and usually consist of four, five, and sometimes six or seven cells: and the number of cells decreases towards the top and bottom of the ear. If the ear is examined when in blossom, we may see what number of grains each chest is formed to produce: or this may be seen afterwards by the number of double valves, which are properly the chaff; for these remain, though the grains have proved abortive; and therefore, by counting the leaves of chaff, allowing two to each grain, and two extraordinary to each chest,

we shall find what number of grains each chest might have produced.

The outward grains of the chests are commonly the largest, and smaller towards the middle, and often stinted grains, or none at all, in the middle cells; and this, notwithstanding most of these had blossoms in them, and the grains had made some progress, or begun forming. They are later than the outside grains, as if last impregnated.

The number of these deficient, or missing grains, is greater than might be supposed without examining them. In a favourable season most of the cells have grains in them; and, if examined at the time of blossoming, the grains may be seen in different degrees of maturity, many of them with the naked eye, and others with a good glass; but though they appear then in general to be fresh, and in a growing state, a considerable number of them is afterwards stinted, or die away entirely. In an ear of red Lammas wheat, of six inches long, twenty-five chests, and two hundred and eighty-six leaves of chaff, I have counted seventy-four grains some time after blossoming; by which it appears, that this ear might have produced one hundred and eighteen grains; and yet at harvest I have not commonly found above sixty grains in an ear of that length. I have likewise this season counted fifty-four grains in an ear of white Lammas wheat, of three inches and a quarter long, nineteen chests, and one hundred and seventy-four leaves of chaff; so that this ear might have yielded sixty-eight grains: but we see in the above tables, that the fullest ear, of the same sort of wheat, and the same length, yielded only forty-one grains; and three of the same length yielded but thirty-eight grains and one third each, upon an average.

The tillage and dressing of land for wheat is done, for the most part, before the wheat is sown, and the benefit of these gradually decrease; whereas the wheat requires a gradual encrease of nourishment, both in order to form large ears, and afterwards to fill them with large grain. And hence appears the great defect of the common husbandry, and points out the advantages of top-dressing



wheat in the spring with foot, or other light manure, which bring the plants a fresh supply of nourishment when they want it most; and hoeing, when that can be performed at the proper times, particularly the deep, or horse-hoeing, has the same effect of producing large ears; and for filling them, the horse-hoeing is the most effectual, as that can be performed at the critical time, and when the plants are large.

It has been commonly supposed, by those who practise the new husbandry, that the most important hoeing, for the purpose of filling the ears with good grain, is soon after the wheat has blossomed: but this, I believe, is a mistake, and that it should be performed immediately before the wheat blows; for before that is over, the grain is considerably advanced. I have found no less than seventy-seven grains in an ear of red Lammas wheat, of four inches and three quarters long, and at the same time a considerable part of the blossoms still remaining on the outside of the ear.

This is above one third more than usually comes to maturity in an ear of that length; so that it seems very probable the ears would produce near one third more corn than they commonly do, were they to be assisted at that time with sufficient nourishment. But this would come too late after the blossoming is over; for by that time, some of the weak grains die, and others are stunted, so as not to be recovered again by any future hoeings. A check at this critical time seems to have the same effect as it has upon a grain of corn, or other seed, after it has begun to vegetate: if that is put a stop to, it never recovers.

From the great number of small ears in a crop, and the deficient grains in all the ears, we may plainly see the advantage of good culture, and of taking the proper seasons to apply it. The new husbandry is, in this respect, much to be preferred; and also because much fewer plants will produce an equal crop; in which there are several advantages, besides saving above half the seed. This method of culture is, indeed, so much superior to the common husbandry, not only in raising wheat, but plants of almost every

every kind, that it is to be wished it was more promoted, particularly by the society for the encouragement of arts, by whose assistance, upon a right plan, there is great reason to expect success.

I am sensible that several gentlemen, and particularly some of your correspondents, have objections to this husbandry, arising partly from a misinformation of Mr. Tull's practice and success, which may hereafter be more fully explained; and partly from the difficulty they apprehend in overcoming the prejudices of the farmers to any new methods.

That they are very tenacious of old customs, is readily admitted, nor are they to be too much blamed on that account: but that they cannot be prevailed with to alter them, upon rational evidence, and proper encouragement, is, it is apprehended, carrying the argument too far, as this tends to discourage all attempts of improvement.

One of the reasons assigned, why the farmers cannot be brought to practise the new husbandry, is the difficulty of managing a drill-plough for sowing corn, which is admitted, though that is not so great as some have supposed; for I have seen a husbandman learn to manage such an instrument, who, after one day's practice, could sow with it four or five acres a day, with the proper quantity of seed, at a less expence than common sowing and harrowing. Mr. Tull's drill-plough is, indeed, too complex: but probably one may shortly be offered to the public, that is easier to manage, and contrived to sow either upon the level, or upon ridges.

One of your correspondents has objected farther, that the farmers cannot practise this husbandry, because they are ignorant of its principles: but these principles are not many, nor hard to be understood, so far, at least, as relates to practice; and, in fact, the practice of the new husbandry is easier than the old, because it is founded upon clear principles, which often is not the case in the old husbandry.

It seems that several gentlemen are not for introducing this new method, because they are not convinced



that it is, upon the whole, better than the old. If we may credit those who have gone furthest in the practice of the new husbandry, those gentlemen abroad in particular, who have published their experiments, there seems to be no doubt of its superiority: but as it is a matter of great importance, that this fact should be fully established to the satisfaction of all gentlemen, from whose influence and example the most valuable improvements are to be expected, the trial is not difficult, nor very expensive: a small farm, with some variety of soils in it, cultivated in the several methods, by way of comparison, and exact accounts kept of the expence and produce of each, would determine this point without any reasonable doubt.

In matters of this sort, speculations and reasonings are not to be relied on without experiments; and the larger they are, they will be the more convincing. Whether something, like what is here proposed, might not have the desired effect, and likewise be a means of making useful discoveries in vegetation, and the culture of plants, is submitted to the consideration of those who have at heart the improvement of agriculture.

A more extensive plan is necessary for introducing new methods into common practice, and which might comprehend the farmers, and also the husbandmen, who execute and excel in the performance. It is recommended to your readers to consider and propose what they think the most probable means for attaining these desirable ends\*.

I am sorry to find that some of your correspondents object to your explaining what may appear obscure in their letters, or giving reasons for differing from them in point of theory, or opinion. The gentlemen who make these

\* We acknowledge ourselves very much obliged to the writer of this letter, and hope to hear frequently from him, not in the least doubting but that he will in future communicate to us the result of some experiments, which will be as acceptable to the common farmer, as the present letter must be to every attentive enquirer into the operations of nature. R. O. E.

these observations appear very capable of throwing light upon the subjects offered to their consideration: I hope they will continue to do so, and promote the design of your undertaking by a free and candid enquiry.

I am, GENTLEMEN,

Middlesex,

Your very humble servant,

July 23, 1764.

E. S.

### N U M B E R XIII.

To \*\*\*\*\* \*\*\*, Esq; one of the Editors of the  
MUSEUM RUSTICUM.

*The Roots of Tormentil recommended for tanning Hides.*

S I R,

I Have, with great satisfaction, read the printed paper you left with me some time ago relative to an effectual, expeditious, and cheap method of tanning without bark. This paper was, I find, published in the year 1729, and addressed by Mr. William Maple, who was, I presume, the principal in the scheme, to William Conolly, Esq; then speaker of the house of commons of Ireland, and to the rest of the members of that house, which, I also find, voted an immediate reward to the proposer, and promised him further encouragement.

Though I have, of late years, greatly interested myself in whatever relates to Ireland, yet have I not heard what became of this scheme after the time above mentioned; neither do I know whether, after the death of the proposer, if he is dead, any thing more was done in the affair.

It must certainly be allowed, that the dearth of leather is, independent of the heavy duty with which it is loaded, to be entirely ascribed to the scarcity and dearth of bark, with which alone it is now tanned.

Oak bark, by its insinuating into the pores, and incorporating with the substance of the hide, produces a  
firmness,



firmness, strength, and consolidation of the parts: it must therefore stand to reason, that other vegetable materials, possessing the same apparent qualities, may probably produce the like effects, when applied to the same use.

Mr. Maple observes that tormentil and cinquefoil roots are ranged in the same medical class with oak bark, and have the same apparent qualities, especially the first, in a more eminent degree than bark itself.

In the trials made in Ireland in this affair, by Mr. Maple and his friends, they were found to answer beyond expectation. The cinquefoil, it is true, did not give so good a colour as the tormentil, but in other respects tanned the hides well.

The tormentil, however, made ample amends; for in all respects, as to colour, bloom, substance, solidity, and weight, in the tanned hide, it completely answered, and in much less time than when bark, even of the best kind or growth, was used.

This assertion is by no means founded on a single experiment, on which little dependence can be had: on the contrary, it is grounded on several years experience, and confirmed by the opinion and testimony of several tanners, and others, who were supposed (by the committee of the house of commons of Ireland, to whom the consideration of the affair was referred by the house) to be good judges in a matter of this nature.

It may not be amiss, and will, I dare say, be very acceptable to your readers, to lay before them a state of what passed before the above committee, when this affair was coolly, impartially, and carefully enquired into, and the specimens produced by Mr. Maple examined by all present with due attention.

The committee were pleased, for their greater satisfaction, to summon a great number of tanners, curriers, shoemakers, and others, to attend to give their testimony in relation to the several specimens and proofs that were to be laid before them.

In respect to the goodness of the leather so tanned, the following specimens were exhibited.

Number

Number I. A calf's skin from the ooze.

Numb. II. A calf's skin uncurried.

Numb. III. A calf's skin curried.

(Each of these, when tanned and dried, weighing about three pounds.)

Numb. IV. A calf's skin, very strong and large, when tanned and dried weighing about six pounds.

Numb. V. Seven or eight pair of soles, of a calf's skin raised.

Numb VI. A bend of bullock's hide for harness.

These were all proved, by Thomas Cooley and Patrick Shale, to be tanned without bark, and with the roots.

Mr. Henderson, master of the tanners, said he was diffident of the goodness of the specimens; but that he should have been thoroughly satisfied, had he known how the leathers had proved, if worn by some porters or chairmen; that the colour of Number II. or III. was not so good as some tanned with bark, producing a calf's skin curried, to compare with them; but did own all the specimens were thoroughly struck, and well tanned; that if they were in the shop, intermixed with skins tanned by bark, he could not distinguish them; and that what tanned Numb. V. and VI. would tan (time and quantity allowed) the thickest bullock's hide.

Mr. Dobson, tanner, affirmed the specimens were not well tanned, because they did not come up to the colour of the skin produced by Mr. Henderson; but, in other respects, the leather appeared to be as good, in their respective kinds, as any tanned with bark.

Mr. Nicholas Gibton, master of the curriers, affirmed, that the skin produced by Mr. Henderson was of an extraordinary colour; that there were not ten such in Dublin; that the difference in colour was but very small, and in regard even to colour, he would chuse those tanned by the vegetables as soon as Mr. Henderson's skin; that all the specimens appeared to be very well tanned; and that he could in no wise distinguish them from bark tannage.

Mr. Devereux, currier, being sent out, returned and produced two calves skins tanned by the bark, which he



took indifferently, and without choosng, from the next currier's shop. They were allowed by all to be of a general, or common colour, and, being compared, were much exceeded by the specimens, and particularly as to colour.

Mr. Edmund Shield, currier, said he never saw better tanned leather than the specimens; that their colour was very good; and that what tanned Numb. V. would tan any hide whatever.

Mr. Brookfield, tanner, reported, the specimens exhibited were well tanned, and thoroughly struck; that neither he, or any other, could distinguish them from bark tannage; and what tanned Numb V. could not fail in any tannage.

Mr. Veckers, tanner, allowed the specimens to be very well tanned, and gave it, as his opinion, that what tanned Numb. V. and VI. would tan the thickest sole-leather.

Mr. John Gades, shoemaker, after giving his testimony, that all the specimens appeared to be exceedingly well tanned, produced a shoe made by him of the leather of this tannage, affirming the leather wrought very well; and that the soles exhibited, under the hammer, all the signs of extraordinary leather.

Mr. Ellis, shoemaker, reported, the specimens were very well tanned; that leather, either dead, or highly tanned, would never carry so beautiful a colour as leather otherwise tanned; that the sole-leather appeared to be very well tanned; and that, in his opinion, this tannage would, in every respect, answer the same end, or intentions, as bark tannage.

Mr. King, shoemaker, said all the specimens were effectually tanned.

Mr. Richard Norris, shoemaker, produced a sole of this tannage, beaten; asserting he never saw so good a sole of raised calf's skin; that it beat firm, solid, and without spreading, or furziness, which are the distinguishing characters of good sole-leather. He desired it might be cut in several places, that the closeness and firmness might be viewed; which accordingly was done, and, answering expectation, was approved.

There

There were a great many other tanners, curriers, and shoemakers, who were of the same opinion: but, considering their testimonies would be but so many repetitions, they need not be recited.

Dr. Richard Helfham, professor of natural philosophy in Trinity College, said Mr. Maple had communicated to him what was used in this tannage, which appeared to him to be well adapted to tanning, and would not fail to give a sufficient strength and rigidity to the fibres; adding, he wore a pair of shoes, the upper leathers of this tannage, daily for four months, and, being willing to try the utmost of the leather, he had new soles put to them; that since, he had worn them about a month; shewing them without any cracks or defect.

Patrick Carrol produced two slips of curried calf-skin, the one tanned by bark, the other by the roots, each three tenths of an inch broad, and ten inches long. The first was the thickest, and weighed a tenth part more than the other. He said he was present, with several others, when it broke, by a weight of one hundred and twenty-nine pounds being hung to it; that the slip of this new tannage, being tried with the same circumstances, bore twenty-nine pounds more than the hundred and twenty-nine pounds, before it either yielded or broke.

In respect to time.

That the specimens, Numb. I. II. and III. were tanned in five weeks, Numb. IV. in nine weeks, Numb. V. in four months, without any hurry extraordinary, or illegal methods, was proved by Mr. Thomas Cooley, and Patrick Shale. On the other side it appeared, that, in tanning with bark, from three to five months were required for calves skins; from seven to nine were requisite for soles of raised calves skins; and from ten to thirteen months for bullocks hides, which, by this tannage, may be effected in nine or ten.

In regard to cheapness, part of the roots used were purchased at three farthings the pound; but afterwards Mr. Maple, being willing to engage the privacy of the gatherer, gave a penny: they lose about a third in drying.



Allowing these as facts, and taking it at the dearest, less than five shillings worth of roots will go farther than a barrel, or four bushels, of the best bark.

As to their plenty and propagation, Dr. Hellsam testified that they grew in great plenty, as he had observed in several counties of Ireland, and were very easily propagated.

Dr. William Stephens, botanic professor in Trinity College, Dublin, in his examination declared, that they grew in great plenty about Dublin, and in several counties he had observed great quantities, chiefly on mountains and barren places; that they were easily to be propagated in almost any kind of soil; and that he had some flourishing in the physic-garden belonging to the university.

As it is necessary that people should be able easily to find out these plants, that is to say, cinquefoil and tormentil, a description of them will be highly proper.

Cinquefoil, in Latin *pentaphyllum vulgare*, in Irish *tuigheag*, or *tuigvearmuirre*, and in some counties *meagigh*, is a plant whose roots are very long, about a finger's thickness, of a dark-brown, or redish colour, and very astringent in taste. The leaves are borne at the extremity of a small stem, five together, deeply indented on their edges, of an oblong form, and hairy. On the grand stem, at the nodes, shoot forth several smaller, terminating with a small yellow flower, composed of six small leaves, surrounding a number of threads, from whence ariseth a cluster of seeds. It flourishes in every hedge, sandy, loose, and deep soil. The roots which are to be preferred are the thick, long, and of the darkest colour.

Tormentil, or septfoil, grows wild on dry pastures and commons in most parts of England. It is the *tormentilla vulgaris*; Park. Theat. 394. and the *tormentilla caule erecto*; Lin. Sp. Plant. 500. It is in Westmeath called *neaubnadis*; in Ulster, *menedin*, or *neaubnid*; in Connaught, *levenet*; in the county of Mayo, *fenède na muc*. This plant hath a thick tuberous root, of a redish-brown colour, sometimes covered with a black skin, of a very astringent taste, and shooting out many fibres. The leaves are generally seven,

set on the extremity of a foot-stalk, of a dark-green colour, deeply indented on the edges, and hairy: from amidst them arise several small weak stalks, of a redish colour, and hairy, about twelve or eighteen inches in height, knotted: at every knot, or joint, is a foliage, and two or three foot-stalks, some bearing leaves, and one longer than the rest; the flowers consisting of four leaves, of a light-yellow colour, to which succeed the seeds: the flower-cup hath eight leaves, four large and four small: the root, when vigorous, sends forth several runners, the stalks of which are of a redish colour, and hairy, that spread over the ground: at every joint, from one part arise two or three stems, each bearing, at the extremity, five leaves; from the other part descend several fibres which become roots.

Common tormentil grows plentifully all over England, by woods, ditches, and on hilly and barren grounds, particularly betwixt the boarded river and Islington; and may be found in a thousand other places by the diligent enquirer.

The learned Parkinson says, from Bellonius, “ that the cups of sweet oak, or acorns, are used in Greece, Asia the Less, and Natolia, to tan and thicken their raw hides, as our tanners use to do with our oak bark;” and adds, “ I don’t think but our acorn-cups will do as much, if any will but make the trial.” He says further, “ that the Turks in Macedonia use the leaves of *sumach* for the same purpose; those in Egypt and Arabia use the cods of acacia; in Phrygia and Lesbos, the bark of the pitch-tree; in Illyria, the leaves of the myrtle;” and infers, that as many things may work that effect, seeing every country useth what is familiar to it, therefore the best and cheapest ought to be preferred, notwithstanding any less public consideration. But to return to tormentil. It grows almost every where, yet chiefly delights in mountainy, barren and shallow soils; the roots seldom striking four or five inches deep. It hath been observed by Dr. Stephens to grow all along the banks of the Doder, from Donore-brook to Old Baun upon Rock-



town hills. It grows on the borders of a great bog for several miles by Ruthmillian, in the county of Meath. In the county of Wicklow, thousands of cart-loads might be, with ease, collected: nor is there scarcely a mountain or bog in Ireland, or the north of England, without plenty of it.

It is observable, that from the bark of the stalk of this plant, as it is breaking forth from the root, excrementitious tubercles, or knots, resembling oak-galls, have been often discovered, and, like them, are subservient to the propagation of insects; which, considering the extreme nice and distinguishing taste of those animalculas, may be well allowed as a proof that their juices are similar.

The roots that grow on mountains are small, strong, and often have a black coat; those that grow on the sides of loughs, and in bogs, are large, of a lighter colour: some of the latter have weighed each above half a pound.

When you chuse the roots, prefer the large knotty roots, which, when broken, exhibit a blood-red tincture, intermixed with the brown; and those that, when cut, leave on the knife a strong purple colour.

The best time for collecting these roots is in the winter season, or early in the spring; and though the seed-bearing stalks and foliage are decayed, yet there are several foot-leaves which remain, and direct the enquirer.

Though these plants grow wild all over the country in such plenty as to be quite sufficient for the purpose of tanning, (for in digging up the roots there will be left some broken parts, some fibres, which will vegetate and give a supply) yet a common root, on a moderate computation, will produce eight or ten hundred seeds: these shedding, and dispersed by winds, and other accidents, some will take root, and carry on a succession.

It may be objected, that the trouble and expence in gathering them, when in so dispersed a manner, would be very great, and a constant supply uncertain; therefore, as the roots, if raised in such soils as might be found to agree with them, would thereby become larger and  
stronger,

stronger, as well as cheaper, Mr. Maple endeavoured the culture, especially of the tormentil, and with such success as to have from each square yard three pounds weight of the roots.

An acre contains seven thousand eight hundred and forty square yards; but for paths, wastes, and enclosing, allow one thousand eight hundred yards not to be employed. As the first year they will be little more than fibrous, allow three years for their growth, though if another year was added, the crop, by an encrease, would sufficiently reward, not only as to the quantity, but as to the quality.

As the best of lands are not required, state the expence of that culture as follows; which will answer well for the meridian of Ireland. In England more might be allowed.

	<i>l.</i>	<i>s.</i>	<i>d.</i>
Three years rent, at five shillings the acre	0	15	0
Ploughing twice, and harrowing — —	0	12	6
Planting — — — —	0	7	6
Hoeing — — — —	1	0	0
Digging up the roots — — —	1	0	0
	<hr/>		
Total —	3	15	0

Suppose each square yard should produce but a moiety of what before was mentioned, and sold but at three farthings the pound, the amount will then be twenty seven pounds three shillings and six-pence, from whence a profit ariseth beyond most of our cultures now in general use; and the tannage may be accomplished at about the moiety of the present expence.

Probably this estimate of the charge and profit may not be so exact as to be strenuously defended; but if defective, there is room enough for any reasonable addition or deduction, without much prejudice to the argument. Different soils, often one and the same, will be attended with different charges. The finer the earth is made, or the more it is broken, before planting, the better vegetation succeeds.



succeeds. At first shooting up of the herbage, particularly where the ground is foul, hoeing, or pulling up the large weeds, will be necessary, that the growth of the tormentil may not be checked: in a little time it will clear itself. As the roots run superficially downwards, not striking at most above four or five inches in perpendicular depth, the charge of digging them up cannot be so much as that which attends potatoes.

The propagation may be effected by planting the crowns of the roots (that part from whence the herbage ariseth) in either autumn or spring, in the same manner as horseradish, splitting the crown so as to leave a bud on every slice, then setting them in the ground about an inch in depth, and allowing each set five or six inches square of ground.

When you take up a plantation, you will have an abundance of small roots that arose from the shedding of the seed, and from the runners, that will be scarce worth the drying, but very proper for planting. If you cut from either extremity of the root a piece of about half an inch in length, it will grow very well. The whole root, if cut into such pieces, may be planted. In all these, I believe, the charge of planting might be saved. If you scatter them before the harrow, the passing of that over them will cover them with earth sufficient, or, at least, the most part of them.

You may plant the runners, as you do strawberries, in the afore-mentioned seasons and distances; and, considering the number of fibrous roots already shot forth, it may be allowed the speediest method.

The seeds ripen about August or September; when ripe, they are of a brownish colour. As they are very apt to shed, the time of ripening must be heedfully regarded. It would be adviseable to cut the haulm, or herbage, a little time before the seeds ripen, laying it on a cloth, or winnowing-sheet, in the sun: when dry, rub the seeds out with your hands, and separate them from the chaff.

In March, the ground being prepared, you may sow and harrow, or rake them into the ground.

The

The cutting of the young stems, if planted in May, will grow.

The roots, when collected, are to be washed very clean from the earth that will remain with them; for otherwise that dirt, when in the layers, settleth into the pores of the hide, or skin, and causeth numbers of spots and discolorations.

In fair weather, it not being a succulent root, they will sufficiently dry if spread on the floor, or a clean part of the field: a little wet will in no case damage them. In case of very wet weather, and continued, they may be kiln-dried, in the same manner as bark.

When dried, they must be bruised, or ground, either more or less, according to the uses designed, or to the proportion you require them to spend in. In case they should not be sufficiently washed when they are pounded, or ground a little, it would be adviseable to sift the dirt, or earth, which, by this means, is broken and separated from them.

When thus prepared, you must proceed in the same manner, and lay away entirely with the same circumstances, as in tanning with bark.

It hath often been objected, First, That if this method should obtain, planting would be discouraged, and so prejudice the landed interest. Secondly, That though it is used in the Canary islands, and it may be done effectually there, yet the produce of our country might have qualities very different, or not exalted to such a degree as to be of a requisite force.

To these I would answer, First, That bark would always bear a price in proportion to the rate of what is substituted in lieu thereof: it would be far from being rendered useless, but only suffer a diminution in value, and that diminution would be more than ballanced by the accelerated growth and worth of the timber.

At present we fall our woods so young, and at such improper seasons, on account of the bark, that the timber is not by far so durable as it would otherwise be; whereas, was the present inducement, the great price of bark, diminished,



diminished, we should have full and well grown timber, cut at a due season, and more proper for building and shipping.

The improvement of those lands that now are unprofitable, or not far from such, would be another balance, if not wholly, yet in part, to the apprehended injury.

Secondly, The use of this root has not been confined to the Canaries. The Rev. Mr. Lucas Jacobson Debes, in his history of the island of Feroe, says, page 120, “ Here groweth a huge quantity of tormentil, which the inhabitants, having no bark of trees to tan their hides with, make use of; God and Nature having revealed to them the dryness of that herb, so that they tan their skins with it, and therefore call it bark.” And, p. 271, “ The men wear shoes of neat leather, tanned with the root of tormentil.” The first of these islands is in the latitude of twenty-eight, and the other of sixty-two; yet we find the same roots used for the same purposes, though probably they may differ in degrees of power.

A great degree of heat is not a quality requisite to the perfection of all vegetables. Saffron in France exceeds the produce of Spain, as much as the little cultivated in Ireland is said to excel the product of England.

The temperate climates of England and Ireland seem, in some degree, to be more adapted to vegetables of this species of power, than those that are deemed hot: bark produced in both is allowed to excel the bark of warmer climates, and also the timber.

It is a contested point, whether the tormentil is not the plant the Greeks called the *britannica*, probably named so from its plentiful growth in Britain. One great advantage arising from this tannage, should it become general, will be, that it will give employment to a great many poor people, who will be set to work in gathering, or raising such a quantity of those roots, as will answer the present consumption of bark.

It will be necessary to mention, that in the proceedings before the committee of the Irish house of commons,

Mr.

Mr. Philip Cooley affirmed, that six pounds of the dried roots, added to some old expended ooze, tanned six calves skins, three of which were produced under the Numbers I. II. and III. and that he believed sixteen pounds would have done as much from the first, or without any old ooze.

Other plants may also be used in this intention, among which broom is said to be efficacious. I could sincerely wish some careful experiments were made, which are, indeed, now become the more necessary, as the price of leather is of late so much advanced, that a good *succedaneum* for bark used in tanning could but, if cheap, be a great acquisition in commerce.

You requested I would digest something on this subject, to be inserted in your work: I hope my compliance with your desire may be of some service to the public, which will be a sufficient compensation to,

S I R,

London,  
August 4, 1764.

Your very humble servant,

A. N.

### N U M B E R XIII.

*A Letter to Mr. Robert Davis, recommending the true Method of extracting the Virtue of Hops in Brewing.*

S I R,

**A**S I deal pretty largely in the hop trade, I beg leave to communicate, through the channel of your useful book, an injurious charge that is often brought against me by most of my customers, and which, I doubt not, is as frequently the case with others in the same way of trade; for though I always give the best price, and am a sufficient judge which are the best goods, yet when I have retailed them out to my customers, seldom a week passes but some of them complain of the excessive sweetness



of their ale, and the intolerable bitterness of their small beer.

Our 'squire the other day swore his ale was like honey, and his small beer like foot; and became in such a passion with me, that all I could say to *his honour* could not appease him.

I desired leave to examine his butler in what manner he brewed: to this he consented, but at the same time said he would be bound to be hanged if any man in England knew how to brew good beer better than Humphrey; notwithstanding which, *Humphrey*, not the hops, was the cause why I had his *honour's* anger: and as I durst not tell him Humphrey's ignorance, I am in hopes he will find it out when he sees the cause truly stated in your *Museum Rusticum*; for not only Humphrey, but Tom, Dick, and Harry, are all guilty of Humphrey's fault.

When they have made their strong beer, or ale wort, they put in the hops in the same manner that they receive them from my shop: the consequence is, that the richer and better the wort is, the less it will partake of the essence of the hop. The rich fat wort sheathes up the pores of the hop, and, as it were, embalms the leaves, so that the beer, or ale wort, can extract scarcely any part of the necessary quality of the hop: but when it is put into the small beer wort, a fluid of a more thin nature, then the pores are unsheathed, and the small beer is rendered as bitter as foot, while the ale is as sweet as honey. Now, if Humphrey, Tom, Dick, and Harry, will previously soak the hops in a pail or two of hot water, the hop will administer its good qualities impartially, and preserve the 'squire's beer to a proper age, and me from the imputation of being an unfair dealer.

To confirm the truth of my observation, take a quarter of an ounce of the best green tea, and instead of pouring on it simple boiling water, let the water have the same quantity of sugar boiled in it that would be necessary to sweeten so much tea when made, and you will find that the sweetness of the water will prevent its extracting the  
grateful

grateful bitter flavour of the tea. In short, the reason is so obvious, that I am persuaded Humphrey will soak his hops, and make an allowance for the additional water so used in his first account; and that this method will produce the 'squire good beer, and me, and every hop-merchant that is honest, a good name.

I am, SIR,

Your's,

Ipswich,  
July 31, 1764.

A TRADER.

## NUMBER XIV.

*In Matters of Husbandry, Facts to be preferred to Reasonings  
and Conjectures.*

GENTLEMEN,

AS you were so kind to give my letter in March last a place in your *Museum*, (see page 24. of Vol. II.) I am emboldened once more to trouble you. Your note on that letter has given me some uneasiness, as I was in hopes, from what I said there, one objection to some of the letters in your *Museum* would, in a great measure, be removed; but sorry am I to hear what you have said upon the affair: believe me, such correspondents do your work a great injury: tell those gentlemen your collection is intended for real instruction and emolument, as well for the cottage as the palace; and how can those be obtained from obscure and indefinite words and expressions\*?

K 2

I

\* We heartily join with our correspondent in wishing that such as favour us with their letters would be as clear and intelligible as possible in their relation of facts, particularly when such facts amount to experiments in husbandry: we could also wish them, on such occasions, to omit no circumstance of soil, situation, season, or method of tillage, that might serve to cast a clearer light on the affair. It is certain, experiments cannot be related in too plain a stile. E.



I grant you, that unlimited words may, with much propriety, be used where there is a general system of any art, or what not, universally known; but in matters of trial and experiment, to those who never made those trials and experiments before, (be they old or young men) such words and expressions should be entirely banished, unless you, gentlemen, will venture to put them in their proper light; but that, I suppose, you, for obvious reasons, chuse not to do; nor, indeed, can you, except you had the same knowledge of the affair as the writer.

I cannot help comparing those correspondents of yours to dark lanterns, who keep all the light to themselves, without letting any others be the better for it. For God's sake! what are knowledge, judgment, experience, and superior talents given for, but to instruct the ignorant, and, by such instruction, be a general blessing to mankind?

I fear, gentlemen, there is too much speculation and opinion \* creeping into your work. The *Museum*, I thought, was to be a channel for nothing but real facts, and sound reasonings; but I suppose you cannot help it. Some speculative correspondents are, doubtless, the cause of it.

This laudable undertaking of yours is likely to continue many years; be bold enough then to stop the growing evil betimes: prevention is certainly better than a cure; none will be offended who can be of any real service to your collection: above all things, let your foundation be good, by removing all obstacles to perfection, as much as in you lies, without fearing or heeding the displeasure of any correspondent who unkindly writes not to be understood; and then I shall be much deceived if you do not raise a structure that will be the ornament of England, and the envy of all the world,

The

\* We wish for no speculations, or reasonings, in our correspondents letters, unless they are founded on facts; yet is it sometimes impossible to avoid giving place to an ingenious probable conjecture. E.

The first day of last May gave an almost-fatal stroke to your valuable undertaking, had not your own public spirit and generosity healed the wound; which, nevertheless, makes it lie very hard on you, gentlemen, and may prevent you, in some measure, from carrying on your work with that spirit you first intended.

I am apt to think you cannot have so great a choice of letters to select from, as if this act had never passed; for some very sensible men of my acquaintance would turn your correspondents, but they make it a matter of conscience, saying, you have, no doubt, many letters come to hand already that are not worth the postage\*.

It is a thousand pities that some noble-spirited members of that honourable house had not this useful infant-undertaking in their minds when this cruel act was on the carpet, and made a motion, that *all letters for the Editors of the Museum Rusticum should go free, so long as that work continued to be published*; but, alas! none thought of it. However, it is to be hoped none will wantonly or willingly put you to unnecessary expences, by sending you useless thoughts and opinions, in order to gratify, perhaps, a vanity of seeing themselves in print, when, at the same time, they may depend upon it they will be deceived; for such, I hope, will never gain a place in your valuable *Museum*.

I

\* If we may judge of our correspondent's friends by himself, we cannot omit inviting them to correspond with us, having no reason to imagine but that their letters will be worth more than ten times the postage of them can possibly amount to. It is true, we have letters which we are under a necessity of laying aside; yet it must be understood, that one sensible, spirited piece makes ample amends for the expence of many not deserving of notice: we therefore seize this opportunity of again requesting the correspondence of the ingenious and experienced on the subjects comprehended in our plan, without giving themselves any uneasiness about the expence to which we must, by the late act, be unavoidably liable; and, in fact, we estimate it at a trifle, when compared to the value of some excellent pieces with which we have been favoured. E. R. N. O.



I have been hitherto only a theoretical correspondent ; for the future it is at your option, whether you will admit me a practical one \*.

I am, GENTLEMEN,  
Wishing you all the success your undertaking deserves,  
Your constant reader,  
Isle of Ely, And well wisher,  
June 30, 1764. G. B.

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## NUMBER XV.

### *A Method of rendering putrid Water sweet.*

GENTLEMEN,

**A**S I think your periodical publications very useful for giving information to the public, I mean, to the middle and lower ranks of people, of what might escape them in larger and more elaborate performances, I trouble you with what follows ; and as this is sent and wrote to you without the knowledge of the gentleman to whom the improvement occurred, though he is known to be the author by the society, of which he is so worthy and useful a member, yet I do not, without his leave, name him.

As the report of the success and utility of what was proposed has been made to the society some weeks ago, I have lamented that no account has yet been published of what may be so extremely beneficial to some, almost, whole counties, in which, at this season of the year, there is scarce a drop of good water to be found.

In the course of experiments which A. was making, he had occasion of mixing clay with a large quantity of water in a cistern.

After

\* It will give us real pleasure to hear from this gentleman on practical subjects, as we have the greatest reason to think that his letters will serve as excellent specimens for some of our correspondents to guide themselves by. E.

After the water and clay had remained thus mixed for some weeks, he tasted the water before it should be thrown out, and found it sweet, and well flavoured. On this he stirred them, to find whether any putrid stench might rise from the bottom, but was agreeably surpris'd to find that the whole was equally sweet.

He now resolv'd to keep it longer, in order to determine what effects time might have on the mixture, and, if my memory serves me right, repeated the tastings and stirrings for several months, with equal success, though some part of the time was summer, during which he expected that the water would have become highly putrid.

He communicated this discovery to the society for the encouragement of arts, &c.

It will not be deemed flattery in me, who declare myself a stranger to A. to do justice to the benevolent intention of this communication. The integrity and steady resolution with which he pursues, in the society, every matter that he thinks can be useful to mankind, warrants, indeed deserves, this public tribute of praise.

The society paid the regard to his communication which so important a matter deserved.

It was referred to the committee of chemistry, with orders to make what experiments should seem to them requisite, to determine a point so necessary to the welfare of numbers; as many diseases are known to take their rise from putrid water.

I shall not take upon me to relate the judicious steps taken by the committee in this matter, not having attended their meetings. I shall only, in general, inform you, that I was greatly pleas'd when I heard the whole confirmed by the report of the committee.

Here is then a very easy means whereby every cottager has it in his power constantly to use sweet and wholesome water.

It is no more than mixing with water a quantity of common clay, sufficient to take off its transparency, so far as that the hand held just under the surface shall not appear through it.

It



It is of no great consequence to the farmer or labourer, by what quality in the clay this salutary change is effected, if they enjoy the benefit arising from it.

If I may venture my opinion, I think the clay acts only as a substance of exceeding small particles, which being diffused through the minute interstices between the particles of water, adhere, by their clamminess, to every animal or vegetable substance they meet with, and carry them to the bottom. There the animal and vegetable particles, the only putrescent ones, are so far separated from one another, by the intervening clay, that they nowhere come in contact in sufficient quantity to bring on a regular putrefaction, but rather dissolve into an uniform substance with the clay.

I shall not enter here into the great naval purposes to which this discovery may be applied, leaving that to the author himself, or to some better pen.

Yours, &c.

## NUMBER XVI.

*On the Insects which destroy Firs and Pines, and a newly-discovered Insect which infests many Sorts of Trees.*

GENTLEMEN,

I Remember that I read some account in your *Museum Rusticum* (see Vol. I. page 16.) about the fir trees being destroyed near the sea by an insect, and was in hopes that he who gave you that hint would also have given some account of the insect; but, as I have heard no more on the subject, I will give you a few observations that I have made on that head.

The first was in June, about six years ago, when being in London on some business, I frequently went to walk in those delightful nurseries about town.

I perceived vast quantities of the young shoots of the Weymouth pines broke, and hanging downwards, and on examining

examining them; I perceived that something had eat out the pith of the said shoots that were broke; upon which I concluded, that it must be some insect which had been the occasion of it; and that this was the reason why the firs and pines about London lost their leaders, and became bushy and stunted, although, till then, I, like most others, had attributed it to the smoke, or sulphur, that came from the town.

Upon this I was determined to use some pains to discover what the insect was; and a favourable opportunity soon offered itself, for a neighbouring gentleman having purchased a parcel of firs out of Oxfordshire, from a nursery which was full of these insects, they soon began to spread themselves in his plantations, so that I was called in to know what was the matter with the trees, and upon inspecting them carefully I soon discovered that it was a brown grub, about four tenths of an inch long, that eat out the pith.

I took home many of them, to see what they would come to; but they all died.

However, this spring I found that they came to a brownish moth, much like that which produces the grub that blights the apples and pears, but less, and the under wings they are much darker.

These deposit their eggs in the heads of the pines or firs, and in the beginning of May are to be found in a small whitish web, out of which they come a brown grub, which eats its way into the leading shoots, and sometimes goes upwards, eating out the pith as it goes; at other times, downwards.

It continues this till about June, when it becomes a crysalis, and lies in a dormant state till about Midsummer, when it comes out a moth; at least those did so which I made this discovery from.

I suppose they may come to perfection sooner in some seasons than others.

In any plantation where these horrid insects are, you will see in June such numbers of shoots broke, and dangling down, as will surprise any planter who has



not been accustomed to these infected trees; and this is the occasion why the firs in some places are such poor paltry trees to what they are in others that are free from this insect: and as they live in any situation near the sea, as well as farther in the country, therefore, if some method is not found out to kill them, we may soon expect to see all our noble plantations of firs and pines destroyed throughout the kingdom, for they every year spread in a terrible manner; and whoever buys any firs, or pines, from an infected nursery, is almost sure to propagate these terrible destroyers; for which reason great caution ought to be used in examining whether the nursery is infected or not, from whence you intend buying your trees; and whoever has got a parcel of infected trees, the best way to destroy the insect is to cut up the trees in May, and burn the branches, for there is no other way of clearing them if your trees are above ten feet high.

This season I have discovered another insect, unknown to any planter I ever met with, and yet seeming to be one which will destroy more trees than all other accidents put together; there being but few trees or shrubs, evergreens excepted, but what are killed by this insect at moving, although hitherto they have been supposed to be killed by the season, or some other accidents.

It is not very busy till April; for which reason your early-shooting trees often escape: but at that time it is upon most young trees that are newly planted, and eats the outward bark off in many places all round the shoots; which causes them to look brown, and die: in others it eats out the eye of the shoots, and that often when they have begun to bud out finely for growing; by which means it kills all the part above ground: but if the tree is of the fruit sort, it will often shoot out at bottom from the stock. If a proper attention is not given to find out means to destroy those insects, which are of the fly kind, they will be a great nuisance to all planters.

Last year I had a large quantity of fruit trees spoiled by them, which were not transplanted; and also numbers of shrubs and roses killed: and this year they began to attack

a large quarter of new-grafted apples, and numbers of choice shrubs, so that I was greatly frightened at the havock which they made; but I soon discovering some of them, and, as they at that time could not fly, they were easily killed.

This insect is of the fly kind, near the size of a fern-fly, but more taper, and longer, and of a greyish colour, with a small sharp head, and two long horns, or feelers. Those I saw had no wings, but I suppose they have them in May, at which time they are all gone.

I have taken great notice this year of the different sorts of blights that we have had, and have made some new discoveries, which if I knew how to deliver in a proper and learned manner, the public should be welcome to them; but as I am unlearned in the politer languages, I must first see how this plain relation is received, and if it should merit a moderate approbation, perhaps I may communicate some farther observations\*;

Who am, GENTLEMEN,

Nottingham,  
August 8, 1764.

Your's, &c.

\* We acknowledge ourselves under great obligations to this correspondent for his very sensible and useful letter, and hope he will speedily favour us with the discoveries he mentions, as they cannot fail being acceptable to our readers. The polite languages are not absolutely necessary to the student in agriculture; and, in fact, we had rather have one experienced and sensible correspondent, than half a dozen learned ones. E. R.



## NUMBER XVII.

*On the Culture of Bear in Ireland.*

GENTLEMEN,

**Y**OUR Tenth Number did not come to my hand till yesterday; and as the season for sowing bear is approaching, I should reproach myself did I omit to comply with your request in note, page 271, Vol. II. I having often wondered, since I came to this kingdom, that this grain is not cultivated in England, at least more extensively, since I am persuaded it might save that more delicate grain, barley, for beer.

Your readers will find Bear mentioned in Ray, *The Complete Body of Husbandry*, Miller, and Lisle, as cultivated in the North, by some called the *barley-big*, or *square barley*.

In this kingdom it is cultivated for malt; but whether it has merit in the composition of beer I cannot say, as I never drink any, (save when I can get the pale Wiltshire drink) all that I ever saw here being of a wretched deep muddy colour, owing, I believe, to the maltsters, who, from the law of the country, are obliged to sell their malt by weight; by which they are tempted not to suffer a sufficient fermentation to be excited, to separate or decompose the pulp of the grain, but put it too soon upon the kiln after wetting, and there dry it very high, as they call it, by which it answers their purpose in the scale: whereas the estimable excellence of malt is to be light; and therefore I hope the selling malt in England by weight will never take place, though I think it would be a national advantage were all the grains, in an unmanu-  
factured

factured state, sold by weight throughout the kingdom, as they are here, and as flour is in England.

Bear is a very strong luxuriant plant, both in grain and straw, resembling barley in growth, but cone-wheat in robustness. It is generally sown here any time between Michaelmas and Christmas, in their best and richest soils, at the rate of one barrel to an Irish acre, which is two hundred weight; and it is no uncommon thing, I am told, to reap twenty, or twenty-five barrels an acre. Two bushels and a half of seed to an English acre will be in the same proportion; I think, a great deal too much; however, that is the practice. I shall sow some this year in different quantities in the drill way, beginning only with fourteen pounds, and encrease till I come to seventy to an Irish acre\*; the latter of which, I am persuaded, will be sufficient.

It is generally sown on the best land in every farm, and usually after potatoes, the ground for which has been well dunged; but some of the lands in this kingdom will produce that, or any other crop, without manure: where aid is necessary, fallows often precede the crop without manure; others fallow, and manure with a very happy provision they have in the thinly-inhabited and interior parts of the kingdom, called lime-stone gravel, of which, upon the first view of it, it is surprising to hear of the effects; but, upon an essay, that admiration ceases, when we find it to be a very strong alkali, which, from the attraction all alkalies have with acids, soon shews the effects of the acid in the air upon it, as that very soon neutralizes it by an effervescence, which is always the consequence of a conjunction between an acid and an alkali: this effervescence must also act mechanically in separating and pulverizing the soil. Thus, by this manure, they not only

\* Five Irish acres make eight English and fifteen perches. Seventy thousand five hundred and sixty feet make an Irish acre, and forty-three thousand five hundred and sixty feet an English acre.



only procure large crops of bear, and other grain, but also greatly improve land, which, before this addition, shall have been miserably poor.

Some of our English writers recommend the sowing bear on strong clays, and other stiff lands; but from the observations I have made here, I am persuaded it will succeed extremely well on any land which may be fit to produce a crop of barley, though it will succeed on cold stiff land where barley will not.

Bear is always ripe with us sooner than any other grain, from one to three weeks; and as barley is, so is this, an immediate ready-money article, we being here in the same situation of distilling a very destructive raw spirit in great quantities, called *whisky*, as I remember we were in England some years ago in distilling and vending Geneva. What is remarkable, they cannot distil here from wheat as in England.

I shall not trouble you, or your readers, any farther on this subject, more than to say, that if you, or the society of which you are members, choose to have any bear to make experiments with in the approaching season, I shall have pleasure in sending you a bag, as by your means I should hope to hear of so useful and really valuable a grain being introduced in the more southern parts of England. I am situated near Dublin, and can conveniently forward it to Chester or Bristol, from whence you may receive it by the waggon.

I had almost forgot to give my reasons why I think it might be useful in England, as I have intimated in the preceding part of this letter. First, and capitally, I think it may, when generally cultivated, be introduced in your malt distillery, to not only a saving of barley, which I am willing to believe is fitter for beer than bear; but, what is more serious, to a saving of wheat, which is still used by those gentlemen, the malt distillers, in large quantities, which I had an opportunity of discovering when I was last in England.

If the price of malt should be lowered by the introduction of bear, I presume the ruddy-faced ale-drinkers of England, who love to have a good tap of their own, would not be displeased.

Again, in many parts of England, to my knowledge, the farmers begin to feed their hogs with barley meal, and when pretty fat, they give each hog a bag of peas to “harden his flesh,” as they call it, and which really completes the fattening a hog most perfectly. Bear may be introduced for this purpose, to a saving of barley: though I have not yet experienced it, yet, from the nature of the grain, I have no doubt of its answering. Besides these promising advantages, I believe more bear may be raised upon an acre than there can of barley.

With respect to your note, page 275, I am sorry to say, that since the writings of the ingenious Tull, Du Hamel, De Chateauvieux, &c. cannot influence my countrymen to a practice founded on the most rational principles, and the strictest œconomy of nature, I therefore fear any thing coming from so obscure a peasant as I am, will make but little way, in a country which I have ever found, in the article of husbandry, superior, in imagination, to all others, as well as to individuals: however, I shall just say, that the successful pursuit of the horse-hoeing husbandry depends upon the obtaining good instruments, and obedient workmen; both which I have acquired, though, I must confess, with some difficulty: the rest any man of common attention, so far as relates to the operative part, may acquire from books; but the effects and operations of bodies upon each other, so far as concerns manures, and the qualities of soils, are to be obtained only by some share of chemical knowledge, and is a part which I wish to see laid open to the aid of the farmer.

In the course of your undertaking, I perhaps may now and then request the favour of a few pages for the event of some of my experiments, which are now



pretty numerous, and will be more so\*. Every field of mine in profit is an experiment, and I keep an accurate account of the expence attending each, and every other article; and, upon the whole, am satisfied it is the cheapest husbandry, and most profitable.

I am sorry I have not leisure to aid in your intended dictionary, which I really think will be a most useful work; but you have my good wishes for its successful completion, with an addition of a few words.

I am, GENTLEMEN,

A devotee to the public good,

And your humble servant,

Ireland,  
August 15, 1764.

An ENGLISHMAN.

\* We hope this sensible correspondent, to whom we are so much obliged, will not delay sending us some account of his experiments in the new method of husbandry. E. R.



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# Museum Rusticum, &c.

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For SEPTEMBER, 1764.

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VOLUME the THIRD.

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NUMBER XVIII.

*A Method of curing the Rankness and disagreeable Flavour of  
the Coffee imported from Jamaica.*

GENTLEMEN,

**T**HE rankness and disagreeable flavour of the coffee imported from Jamaica, and our other colonies, has been greatly and justly complained of. This has been generally attributed to the too great richness of the soil; and it has been imagined that it would cease and go off, as soon as the soil should be less disposed to make the coffee plants luxuriant. But I am inclined to assign another cause for it.

It is well known that the coffee brought from Turkey and the East Indies are both bought at the same market, and both the produce of the same country, though the former is a small hard berry, and the other much larger and softer.

The difference arises from this. What we have from Turkey is conveyed in open barges, or vessels, by a pretty



tedious navigation up the Red Sea, exposed the whole time to the intense heat of the sun, by which the watery particles are exhaled ; and again, after its being landed, it undergoes another process of the same sort, by being carried on the backs of camels a very long journey in that intensely-hot climate to Alexandria : by this means it is cured, and in the form we receive it.

Whereas what is brought by the East-India company is immediately from the market, packed into the close hold of the ship ; and for this reason we receive it crude, with the juices undigested.

The case is the same with the coffee brought from the colonies : therefore, if this observation should be properly attended to, and the coffee for a proper time exposed to the sun before it is shipped, it is extremely probable that it might be as good as the Turkey coffee, and be a considerable article in exportation, perhaps to that very empire.

I am the more inclined to believe that this will be effectual, as I have been often assured that Jamaica coffee, by being dried in the sun, on the leads of houses in London, has been greatly improved.

If this should be of any service, it will answer all the purpose of \*,

GENTLEMEN,

Oxford,  
July 12, 1764.

Your's,

P. E.

\* We are much obliged to this gentleman for his ingenious and probable conjecture, which carries with it a reasonable appearance of success ; and we hope he will frequently favour us with his letters. R. H.

## NUMBER XIX.

*An experienced Method of guarding against smutty Crops of Wheat, by a due Preparation of the Seed.*

GENTLEMEN,

AS the smut in wheat is an evil greatly complained of, and not without reason, among farmers, I have no doubt but your readers will be well pleased to be informed of a means of preventing the damage which is annually experienced in this respect.

As I write from experience, what I communicate may be depended on; and I have great foundation for thinking it will be found of particular service to such of your readers as are practical farmers, and who yet are unacquainted with the method I intend to recommend.

I have, for many years past, escaped having smutty crops, by a proper care of the seed-wheat before it is put into the ground; and the method I pursue, though efficacious, is in itself simple and cheap.

I take four bushels of pigeons dung, which I put into a large tub: on this I pour a sufficient quantity of boiling water, and, mixing them well together, let them stand six hours, till a kind of a strong lye is made, which, at the end of that time, the grosser matter being subsided, I cause to be carefully drained off, and put into a large keeve, or tub, for use.

This quantity is sufficient for eighty bushels of seed-wheat.

My next care is to shoot into this steep a manageable quantity of my seed, which is immediately to be violently agitated, with either birchen brooms, or the rudders that are made use of in stirring the malt in the mash-tub in a brewing-office. As the light grains rise, they must be diligently skimmed off; and after the seed has been agitated in this manner for the space of perhaps half an hour, it may be taken out of the steep, and sown out of hand, with great



safety : and I can venture to say, that if the land is in good heart, and has been properly tilled, it will not, when sown with these precautions, produce a smutty crop.

I am, GENTLEMEN,

Your humble servant,

A YORKSHIRE FARMER.

## NUMBER XX.

*A cheap Kind of Fuel recommended, which is in Use about Bristol, and at Caermarthen, in Wales.*

GENTLEMEN,

SEEING, in one of your volumes, a description of the method of making coal-balls to serve for fuel, as practised at Liege, and other places abroad, I own I was much surpris'd to think what could be the reason of setting before Englishmen the example of foreigners rather than of their own countrymen : perhaps the writer of the paper laid before the royal society knew not that coal-balls were made in England and Wales ; if so, he certainly merits our praise for endeavouring to introduce useful practices into his native country ; practices which, if pursued, might be of great benefit to the poor, to supply whose pressing wants is an act worthy the humanity of a prince.

I intend in this letter to inform your readers in what manner coal-balls are made in England, though the practice is not so much extended as it ought to be.

About Bristol, Brislington, and other places in this part of the west of England, they very commonly make coal-balls of their culm, or small refuse coal, which would not otherwise be saleable.

The way in which these balls are prepared is, to take a certain quantity of the culm, to which they add an equal quantity of sleet, or mud, which the tide leaves on the sea shore : after mixing them together grossly with shovels, they

they blend them with their hands more perfectly, and mould them into balls about the size of a small child's head, or about six inches diameter.

These balls they burn immediately as they are made, or they may be laid up and kept as long as the owner pleases.

They are supposed to make them in the greatest perfection at Croken-pill, near Kingroad, in the river, about seven miles from Bristol, a place of rendezvous for pilots.

At this place they seldom use any other fuel, and find it answer extremely well, being much cheaper than coal, making as good a fire, and lasting longer.

The inhabitants here make it a rule to work as much culm into the fleech with their hands, when they mould the balls, as they possibly can without making them crumbly.

I have seen this fuel burnt many times at all seasons of the year, and always observed it made a pleasant, good, fierce fire; neither does it emit any disagreeable fumes, so as to occasion in the room a sulphureous smell.

It has not, I am informed, been used in these parts above thirty or forty years, but is now greatly preferred, though they can buy coal for fourteen-pence a horse-load (*about four bushels*) laid in.

How much more then ought this fuel to be recommended in the metropolis, where coals are, to the poor, four times as dear!

I shall, in the next place, describe to you the method in which coal-balls are made in Wales, particularly about Caermarthen.

Instead of fleech they here use clay with the culm, allowing two parts culm and one of clay, adding to the heap a sufficient quantity of water, which they temper with it, in the same manner as if they were making mortar with lime and sand.

After the culm and clay have been sufficiently mixed and tempered together, they form them into balls, in the same manner as is done here in the west of England.

These



These last-mentioned balls made with clay are not, it is true, such pleasant fuel as those made with fleech about Bristol, because the clay is apt to send forth a stinking smoke, especially if the balls are burnt before they are dry; yet notwithstanding this inconvenience, which the lower sort of people give little heed to, they afford a very cheap, good fuel to the poor.

I own, I think it is a great pity the poor of London are not relieved from the enormous expence, to which they are every winter subject, for fuel, especially as it might so easily be done. The culm might be imported into the Thames very cheap, and nothing would be more suitable than the river mud, which is now so great a nuisance, to mix with it to form the coals: I have great reason to imagine it would even do better than the fleech, being of a richer and more combustible nature, as it must needs be, from its containing the washings, or *exuviae*, of so large, populous, and opulent a city as London is.

There may, perhaps, be reasons why this scheme should not take place: the duty on coals might be diminished, for culm could scarcely afford to pay any; and there is not the least doubt but the whole body of coal-dealers would exclaim, was it attempted, and arm themselves against an innovation so dangerous to their profits.

Yet, after all, why should not we have some thought for the poor as well as the rich? Why should they be obliged to give a fourth part, at least, of their earnings, to purchase themselves fuel in a pinching winter?

There is, besides, another advantage which would undoubtedly result from the adoption of this scheme, as some hundreds of poor labourers would find constant employment in the manufacturing of the coal-balls.

I must not omit to observe, that this practice of making coal-balls with culm and clay has been in use about Caermarthen many centuries; and it may, perhaps, be no improbable conjecture if we say, that the common custom, of calling large coals *round coals*, took its rise from the form in which these coal-balls are usually made, being first  
applied

applied to them, and afterwards generally to other large kinds of coal, though of a different form.

As you seem, gentlemen, to have the good of your country at heart, you will, doubtless, give this letter a place in your valuable collection, as by so doing you will possibly afford an opportunity, to some persons who may be possessed of more wealth and influence than I have, of adopting a scheme which would scarcely fail being extensively useful, particularly to those we should most frequently think of; I mean the poor.

For my part, as I live, and am fixed by my business, at so great a distance from the metropolis, I cannot, in charity, be supposed under the influence of any pecuniary views: in truth, I am not; neither do I imagine that the putting this scheme in execution in its utmost extent could any ways turn out to my profit: pleasure it would certainly give me, as it must, I think, to every reflecting man, to comfort himself with the idea of having it, by any means, in his power to alleviate the pinching and very crying distresses of God's friends, the poor. I have been your constant reader, approve of many things contained in your work, and was determined, at least for once, to become a contributor to it. I am,

Bristol,  
July 27, 1764.

Your humble servant,  
A SOMERSETSHIREMAN.

## NUMBER XXI.

*On the Culture of Cabbages according to Mr. Randall's Semi-Virgilian Husbandry.*

GENTLEMEN,

I Have lately met with a book which has given me great satisfaction in the reading; I mean, the Semi-Virgilian Husbandry, by Mr. Randall, of York\*.

Though

\* We have read Mr. Randall's book with some pleasure, as well as our correspondent. The author certainly means well,  
and



Though I approve of the chief part of the contents of this treatise, yet I could wish the author had steered clearer of philosophy: I do not, however, intend to bring any charge against him for advancing facts which are not philosophically true; on the contrary, his reasonings are, in general, well founded, and he has not, in my opinion, laid down a single hypothesis which does not, in some measure at least, merit our approbation.

After having said so much, it will be, perhaps, necessary I should give some reason why I object to Mr. Randall's having introduced philosophical enquiries into his treatise. The reason I would assign is very obvious: I greatly fear that the dread, which most practical farmers have of every thing that borders on philosophy, will prevent his treatise being so much read as I, and every sincere lover of husbandry, would wish. He will meet probably with a good many gentlemen readers; but that will be of little service to the cause in which he is embarked; for gentlemen, in these times, think it beneath their dignity to concern themselves much about the progress of agriculture. If Mr. Randall, therefore, had confined himself more to a relation of the facts which occurred in the course of his own practice, farmers would have received some benefit from his endeavours to do them service; but as it is, I fear few of them will have the courage even to attempt reading his book.

As

and seems to have had experience; but the method he has taken to recommend his system will not, we fear, be attended with much success. Every work, by which a farmer is to be instructed, should be plain, clear, and perfectly intelligible; whereas Mr. Randall's essay is obscure in many parts, abstruse, and not a little confused: in truth, one reason for our inserting this long letter is, an opinion we have entertained that Mr. Randall's treatise, in its present form, is not likely to fall into the hands of many farmers; and his method of cultivating cabbages is certainly worth attention. By the Virgilian method of husbandry Mr. Randall means that commonly practised; and the Semi-Virgilian method is another name for the new husbandry executed by the ordinary implements, of which M. Du Hamel has treated in his Elements of Agriculture. E. R.

As I have greatly at heart the interest of the common farmers, which I take to be closely connected with that of the public, I shall, through the channel of your collection, give them some little insight respecting the manner in which Mr. Randall proposes cabbages should be cultivated in the field-husbandry according to his newly-proposed system.

The soil on which the cabbages are to grow is supposed to be a loam in good heart; and as the Semi-Virgilian husbandry requires only that the soil should be made exceeding fine without the assistance of any dung, therefore the land destined for these cabbages must be thrown out to be fallowed, that it may enjoy all the advantages of a winter and summer fallow, so as to be exquisitely well prepared for the reception of the plants about Old Michaelmas.

As cabbages extract their nourishment from a considerable depth, as well as from the surface of the soil, it will be necessary that the land should be double-trenched during the time of fallowing.

The loam, immediately after harvest, is to be turned up, and the workman is to go as deep as he can with his plough: another plough is immediately to follow in the same furrow with a higher earth-board, which will cast the mould over, and bury the stubble if it was not by some method destroyed: in this manner the field will, as it were, be turned up-side down, double spitted more than a foot deep, and the stubble will be sooner rotted. The harrows must then make the ground as fine as the season will at this time permit.

The next thing to be done, when the weather will admit of it, is to double-trench the land, and lay it up till the spring in sharp ridges.

Here Mr. Randall makes a very sensible and useful observation, which is, that the teams must not be suffered to go upon the ground till it is first tried with a spade, to see whether the soil is dry enough to the depth it was ploughed before; for treading the ground in any season of the year, when it is not in order, or sufficiently dry, is a very destructive practice. The standard in this case



recommended, very properly, by Mr. Randall, is, when the mould crumbles, and feels mellow, between the finger and thumb, instead of adhering, so as to judge, by the touch, whether the parts will give way to the tread, or whether the earth be in such a state of cohesion as to be padded under the horses feet.

The manner of performing the ridge-work, or laying up the soil for the winter, follows.

The ploughman is to begin in any part of the ground he pleases, and go one bout, throwing the furrows in such a manner that they may form a little ridge. When this is done, the horses must turn to the left, and the share-point be put to the end of the trench; then go another bout in the manner before mentioned, the horses again turning to the left, and continuing to go on in this manner till the piece of ground is ploughed throughout. If the plough begins close to a hedge, it may save some little trouble in going over more ground than necessary; and where it can conveniently be done, the plough should cross the path the horses-went in the first operation, as this cross-ploughing is often a means of stirring the baulks made by a former ploughing.

The first bout should be drawn out as strait as possible, the rest depending upon it; and if the hedge is not strait enough to allow this, the ploughman should begin at some distance from it for the advantage of a strait line, leaving the skirtings near the hedges to be last finished. The land will now lie in gentle rising ridges, and regular vallies, ready for the third operation.

In this the ploughman is to go the very same ground over again, with the same plough, or one a little wider and higher in the earth-board, and throw the mould over the right, and then over the left, sides of the first ridge, going four inches and a half, or five inches deep, and turning off, as before, continually to the left. This trench-work requires four good horses to a plough; and the second team, in the first operation, if the ground is hard, and has not of a long time been disturbed, may require five horses, but no more.

The ground will now lie in sharp ridges, and deep trenches; and if the work is well executed, the bottom of the hollows, or little ridges, will be near twelve, or at the very least nine, inches below the basis of the ridges, or surface of the ground, and about eighteen inches wide; and the distance from the top of one ridge to another will be near three times and a half the width of the plough, as it runs in the ground after the horses; the breadth of the ground which each ridge stands upon being about fourteen inches.

In this situation the land is to remain till the month of February, when the first opportunity that occurs in that month, the ridges and the whole ground being of a due dryness, is to be seized for the next operation.

In the first place, a pair of *ox-harrows*, or the heaviest of all, in many counties called *drags*, are to be yoked together, and the cattle are to go a-breast, not in a line, but two on one side and two on the other, and to walk in the trenches, having a ridge between them; by which means the harrows will move on the crown of one ridge, as the centre, and the outward parts, when well guided, will reach to the top of a ridge on each side that which divides the cattle. The harrows, which are to go only once in a place, will greatly reduce the soil, and pulling down the ridges, the ground will be in a manner level, yet not so even but that the ploughman may, with ease, discover where the ridges stood. The ploughman is now to proceed in the same manner as when he threw the ground into ridges, keeping the plough-share along the crown of a ridge, which will be visible enough after once harrowing. When he has gone one bout, which must be on the tops of two ridges, the furrows will be turned to the right, and lie pretty flat on that part which was a trench before: thus proceeding throughout the field, the whole will again lie in single ridges, and single trenches; but, if the weather permits, as soon as this operation is performed, the soil must be double-trenched in the same manner as the second ploughing of the second operation, when it was laid in ridges for the winter: thus the whole



field will again lie under the double work of high ridges, and deep trenches.

We are now to suppose the ridge-work brought forward to the latter end of the spring, or the beginning of the summer, when weeds begin to grow powerfully.

The ridges must, at this time, be pulled down, as before, with heavy harrows; but instead of going once, the servant must go twice in a place, and then use the lighter harrows, and afterwards the finest of all, in order to prepare the ground in such a manner as to induce a large crop of weeds to grow: but if the weather will permit the horses to tread on the ground without spoiling it, they must not be suffered to grow any higher than a plough can bury by going the usual depth; and when the weeds are turned down, another plough is to follow, and to cover the furrow of the first, after which the land is to be harrowed down again as level as possible, in order to prepare it for yielding another crop of weeds.

When the second crop of weeds is got to a tolerable height, it may be proper to try with a spade whether the first weeds, which were turned down to the bottom of the second stratum, are sufficiently putrified; if they are, the land is to be ploughed as before; but if they are not, the weeds now growing must be turned down by one ploughing to such a depth only as will bury them, and the land must afterwards be levelled with a loaded bush-harrow.

We may suppose, that by the middle of August the weeds first turned down will be rotted; therefore at that time the third crop of weeds may be turned down by the double spitting already mentioned, and left in this condition till there is occasion to make use of the land\*.

Just before the time of planting the cabbages the land must be laid as level as possible, and by frequent harrowings it will not be inferior to a garden in fineness.

The ground being now ready to receive the plants, it will be necessary to point out how they are to be raised  
and

\* Mr. Randall's double-trench ploughing is very expensive, yet it may possibly answer in raising so valuable a crop as cabbages often prove. E. R.

and transplanted, which cannot be better done than in Mr. Randall's own words.

“ The ground, on which the cabbage-feed is to be  
“ sown, must be exceeding fine, in great heart, and ab-  
“ solutely clear of weeds, otherwise it will be difficult to  
“ raise the plants in perfection; and, in order to this,  
“ the richest and cleanest piece of ground must be fixed  
“ on, immediately after the same harvest when the fallow  
“ for the cabbages begins; and the nursery for the plants  
“ must have all the advantages of fallowing equally with  
“ that which is to receive the plants; and about the mid-  
“ of July the cabbage-feed is to be sown: but as hus-  
“ bandmen are unacquainted with the manner of sowing  
“ this feed, it will be necessary to employ an honest gar-  
“ dener to perform this business as it ought; and the same  
“ person may be also employed to prick out the young  
“ plants upon another piece of ground, in great heart,  
“ and clear of weeds, lest they should draw one another  
“ before the season arrives when they are to be transplanted  
“ out for good and all, on the ground whereon they are  
“ to stand for a crop: one perch will raise plants suffi-  
“ cient for more than an acre of cabbages, from two  
“ ounces of seed; but it is better to have a great choice,  
“ as there will be some puny plants in the nursery: let  
“ the gardener, or those who prepared the ground, take  
“ what care they can; and the seed must be procured  
“ from Scotland, as the Scotch cabbage-feed is the pro-  
“ perest for this vegetable, when designed for the use of  
“ cattle, as they will grow late, and to an enormous  
“ size, when they have all the advantages of ploughing  
“ among them, during the time of their growth.

“ If the gardener is diligent, the expence of thus  
“ pricking out the tender plants, at six square inches, on  
“ about six perches and a half, will be about four or five  
“ shillings; but if the owner can depend upon the nur-  
“ fery's being clear of weeds, though the weather be very  
“ growing, there is a much cheaper method of raising the  
“ plants: for if the gardener, with the above two ounces  
“ of seed, to be sown on six perches and a half, takes  
“ care



“ care to set out the plants with a small hand-hoe, be-  
 “ fore they begin to draw one another, he may hoe up  
 “ the puny, and leave none but the stoutest plants, at a  
 “ proper distance, suppose six inches, asunder, rather  
 “ under than over. While he is doing this, he may  
 “ assist the plants he suffers to stand, by giving them a  
 “ little mould to their stems, and checking any weeds  
 “ that appear: by this means the plants will grow to  
 “ perfection, and need not be removed till they are  
 “ transplanted out for the crop: and if the gardener sows  
 “ the seed, and leaves the plants on the same ground,  
 “ about six inches asunder, one perch will transplant  
 “ twenty-five, and, consequently, six perches, and about  
 “ a half, will transplant an acre, from two ounces of  
 “ seed on six perches and a half, and set out at six inches  
 “ from each young plant.

“ When the plants are thus raised on the nursery, by  
 “ either method, pricking them out, or setting them out  
 “ with the small hand-hoe, and the season is arrived for  
 “ transplanting them on the ground they are to stand on  
 “ to be cabbages, the next business is, to consider the  
 “ distance they are to stand from each other, when  
 “ transplanted; and here we must first observe, that  
 “ gardeners usually set them about two feet and a half  
 “ from each other throughout the piece of ground allotted  
 “ for that purpose; and, during their stay on the soil,  
 “ they only hand-hoe and earth them well up, when on  
 “ the bed they are transplanted upon, without ever giving  
 “ themselves any farther trouble about them, being no  
 “ ways anxious to make them grow to the largest size  
 “ which they are capable of.

“ In an acre there are four thousand eight hundred and  
 “ forty square yards, which is about sixty-nine yards and  
 “ a half every way; but, in order to proportion an acre  
 “ in a piece of ground, if the length be measured, and  
 “ the above number of square yards, in an acre, be  
 “ divided by the length, the quotient is the breadth, and  
 “ both dimensions multiplied together will give four  
 “ thousand eight hundred and forty yards. Now, as  
 “ gardeners

“ gardeners plant their cabbage plants at two feet and a  
 “ half afunder, this is allowing fix fquare feet and a  
 “ quarter for each plant, and makes the number of about  
 “ fix thoufand nine hundred and feventy plants on an  
 “ acre; and plants fet in two rows, at two feet afunder,  
 “ and the plants fet two feet from each other in thofe  
 “ rows, and then meafuring out four feet and a quarter  
 “ from one of thofe rows, and fetting two rows more in  
 “ the fame manner, and fo on throughout the ground;  
 “ when the plants are fet in this manner, the number of  
 “ cabbages will be about fix thoufand nine hundred and  
 “ feventy, which is the fame as the gardeners raife on an  
 “ acre, and the liberty of ploughing on one fide of every  
 “ row, or in the interval, and horfe-hoeing between the  
 “ narroweft rows, or the partitions.

“ When the proper feafon arrives, about Old Michael-  
 “ mas, or a little after, the plants are to be fet, as above,  
 “ firft one row the length of the ground, at two feet  
 “ diftance from each other; and when this is done, then  
 “ another row in the fame manner, at two feet diftance  
 “ from the laft; and, when this is done, another row  
 “ muft be planted, in like manner, at the diftance of  
 “ four feet three inches from the laft; then another row  
 “ of plants, at two feet diftance from the laft: here, then,  
 “ one fyftem will confift of one partition of two feet,  
 “ and an interval of four feet and a quarter, and of two  
 “ plants to each fyftem; for four feet and a quarter,  
 “ added to two feet, and then multiplied by two feet,  
 “ the diftance of the plants in the rows gives the paralle-  
 “ logram for two plants, or twelve feet and a half; and  
 “ this, divided by two, gives fix feet and a quarter;  
 “ which is the gardeners diftance, in their practice of  
 “ cultivating thefe plants, or raifing about fix thoufand  
 “ nine hundred and feventy cabbages on an acre, which  
 “ is two thoufand one hundred and thirty more than can  
 “ be raifed when they are planted in fquare yards through-  
 “ out the acre.

“ The firft thing to be done at the approach of winter,  
 “ but when the foil is dry, is, to throw the intervals up  
 “ into



“ into a sharp ridge at two bouts, twice in a place, and  
 “ as deep each time as the plough can go. This ridge-  
 “ work, and double spitted, may be performed very well  
 “ at two bouts, as it will allow nine inches in the middle  
 “ of the interval, when the ploughman begins to turn  
 “ the mould of the first bout upon; and then, at the  
 “ second bout, he will reach within three inches of the  
 “ plants, if he measures the ground as he ought with his  
 “ plough, in leaving nine inches to turn the first furrow  
 “ on, and keeps exactly nine inches, in the second bout,  
 “ from the land side of the first: however, he must so  
 “ manage his two bouts as to come no nearer than three  
 “ inches to the beds of plants while he is going the  
 “ second bout.

“ This operation being over, the ground will then lie  
 “ in the following form: there will be a high two-bout  
 “ land in the interval, taking up five furrows in breadth,  
 “ or three feet nine inches, reckoning nine inches for the  
 “ breadth of the plough, as it runs in the ground; and  
 “ there will be a drain, on the out-side of each bed of  
 “ plants, nine inches wide, and, it being double spitted,  
 “ or twice in a place, near a foot deep, at least cut so with  
 “ the plough, though some mould will unavoidably fall  
 “ back again, notwithstanding the care the ploughman may  
 “ take to prevent it. And from the edge of the land-side  
 “ of each drain, or the breadth of each bed of plants,  
 “ there will be two feet and a half of ground, which,  
 “ through the winter, will be kept very safe from too  
 “ much wet, by means of those drains.

“ About the latter end of March, or the beginning of  
 “ April, if the ground be dry, the ploughman is to go  
 “ once in a place in the drain, or open trench, in order  
 “ to deepen it still more, and to stir the mould; and the  
 “ ploughman need not be in any pain for the fibres of the  
 “ roots, though he cuts or disturbs some of them in this  
 “ operation: for as the fibres which have stretched out  
 “ into the bed, are undisturbed, he may cut off the outer-  
 “ most as near to the roots as he pleases, without doing  
 “ any

“ any harm, unless he lets the plants down into the  
“ trench.

“ When this operation is over, he must immediately  
“ throw down the ridge, by turning it back again, and  
“ leave an open trench in the middle of the interval,  
“ which may be done, very conveniently, at two bouts,  
“ without overthrowing the mould upon the plants; but  
“ he must remember to go twice in a place with his  
“ plough, to keep the ground double spitted, which is of  
“ great consequence to the plants, and therefore he must  
“ not think of omitting it: after this operation, the  
“ soil will have a double trench in the middle of the in-  
“ tervals, the width of twice the breadth of the plough,  
“ and about twelve inches deep, if some of the earth  
“ did not fall back again; and there will be mould,  
“ the quantity of what is thrown out by the plough, in  
“ double spitting, lying between the plants and this open  
“ trench, and which will be thrown pretty near the  
“ roots of the plants; which mould is to continue there  
“ till the wants of this vegetable require us to make an  
“ alteration, when we have paid some attention to the  
“ partitions, and also to the plants themselves.

“ About the middle or latter end of April, if the  
“ ground is dry, the horse-hoe must be used in the par-  
“ titions, and the ploughman must go as deep with it as  
“ he possibly can, in order not only to disturb the young  
“ weeds, but also to stir the earth, in the most effectual  
“ manner, within the reach of the fibres; but imme-  
“ diately before this operation, the hand-hoe is to be  
“ used in the rows, between plant and plant, to check  
“ the weeds, and refresh the mould about the roots, and  
“ the hoer must strike his instrument as deep as he can;  
“ and when the weeds, any time after this, appear above  
“ ground, in the partitions, or among the plants, the  
“ horse-hoe and hand-hoe must be used as before, but  
“ generally so timed, to be about a fortnight or three  
“ weeks after any alteration has been made in the  
“ intervals, that the fibres may have time, in either



“ safe, to heal again, instead of being disturbed all at  
“ once.

“ About the beginning of May the ploughman is to  
“ draw the heavy harrow, and then the finer, over the  
“ intervals, in order to pull the mould into the open  
“ trench, level, and make the whole interval fine, and to  
“ prepare it for a ploughing. These harrows, being the  
“ same formerly mentioned, will do this business very well,  
“ without doing any harm to the plants; and if there be  
“ a good weight laid on them, they will do great execu-  
“ tion, in pulling down the earth into the trench, and  
“ making the ground exceeding fine; which last article  
“ is of importance, as the plough will, in future opera-  
“ tions, turn down this fine surface to a depth where the  
“ lower horizontal fibres will meet with it, and find plenty  
“ of nourishment therein.

“ When the harrows have done their utmost, the  
“ ploughman is to go one bout, and throw up a ridge in  
“ the middle of the interval, if the ground is dry, and  
“ to double trench, as before; and, in order to come  
“ near the plants, he may leave the breadth of about two  
“ furrows, on which to turn his bout, and then he will  
“ reach within six or seven inches of the plants with his  
“ share: when this is performed throughout the ground,  
“ the harrows must immediately be used as before, and  
“ then the ploughman is to turn all the mould towards  
“ the plants in two bouts, and double trenching, by  
“ which there will again be an open, deep trench in the  
“ middle of the intervals: and about a month after this  
“ he is to use the harrows again, if the plants do not  
“ spread too far into the intervals; if they do, he must  
“ level the ground with his plough, or the horse-hoe, and  
“ then go one bout, and turn the mould on the breadth  
“ of a furrow and a half, still going twice in a place;  
“ and then the ridge, and open furrow, on each side,  
“ will contain about two and thirty inches, or the breadth  
“ of three furrows and a half, and he will have gone within  
“ nine inches of the stems of the plants, which is near  
“ three inches farther off them than before.

“ In

“ In this form the ground is to lie a month, unless the  
“ season be very growing, and the weeds make a bold ap-  
“ pearance; in that case, it may be necessary to disturb them  
“ sooner, by turning the ridge back again into the open  
“ trenches, and leaving the interval open in the middle,  
“ as formerly; and about Lammas, or a little before,  
“ the ploughman is to throw down the mould into the  
“ middle open trench, and make the intervals level and  
“ fine, and this is the last operation arising from plough-  
“ ing; the ground being now to remain without distur-  
“ bance, any farther than what ensues from the use of  
“ the horse-hoe, in the intervals, after the ground is  
“ made level, as, before summer is over, there may come  
“ up some weeds, which must not be suffered to appear  
“ with impunity. It is presumed, that due care has been  
“ taken, throughout the season, of the partitions, and be-  
“ tween plant and plant in the rows, and likewise on the  
“ outsides near the plants, in the intervals, where the  
“ share and coulter could not reach without doing da-  
“ mage; and therefore, when the vegetables shut out the  
“ horse-hoe, in the partitions, or where the plough  
“ could not, or durst not, reach, the hand-hoe was to  
“ have done its office, to supply those wants, in the best  
“ manner it could.

“ There is another method, which we have not men-  
“ tioned, to transplant this vegetable on the ground it is  
“ to grow into a cabbage, which is cheaper; and it is  
“ this: those ploughmen who can draw out a very strait  
“ furrow set off first, and the persons who are ready with  
“ the plants put them into the trench, so made with the  
“ plough, at their proper distance from each other; and  
“ when the ploughman has gone the first bout, within  
“ the compass of three feet and a half from the share-  
“ point, he is to go another bout, to turn the mould into  
“ the first open furrow, so as not to bury the plants in  
“ this operation; and he will have gone these two bouts,  
“ one to open the ground for the reception of the plants,  
“ and the other to give them mould, by the time the  
“ people have supplied the furrows with plants, so that



“ they may be all ready to start together again when  
 “ the team returns to the head-land, from making his  
 “ second bout.

“ The plants, on this occasion, must be placed upright  
 “ in the trench, standing against the right side of it,  
 “ which may be done if the plough cuts the ground true,  
 “ and the mould be well scooped out; and this will shew  
 “ care in the person that holds it, and that his instrument  
 “ is a good one. There must be a person to carry a  
 “ gage, divided into two feet in each division, ten feet in  
 “ length, which will contain six points, the two ends,  
 “ and four intermediate ones, numbered from 1 to 6;  
 “ which division and points signify, that a plant must be  
 “ placed in the open trench, directly against one of those  
 “ figures, as the gage lies upon the ground, when the  
 “ man, who has the care of it, lays it down in a strait  
 “ line, according to his office. In order to shew how  
 “ the plants are to be ranged, in a most regular manner,  
 “ exactly at two feet from each other, in the rows, we  
 “ will suppose the ploughman to be just setting off to go  
 “ his first bout: in this case, the gager is to stand with  
 “ his instrument, which may be a square piece of wood, of  
 “ about three inches over, or twelve in the girt, and num-  
 “ bered 1, 2, 3, 4, 5, 6, facing the right side of the  
 “ plough when it sets off; he must lay his right hand just  
 “ beyond figure 4, and his left just beyond figure 3; and,  
 “ holding it in this manner, he will poise the gage very  
 “ well, and lay it down, take it up, and remove it, with-  
 “ out trouble to himself.

“ Now, by standing about five feet, on the right side,  
 “ from the place where the plough enters, and two per-  
 “ sons with plants in their aprons, and a woman with a  
 “ basket full behind him, standing on the left side; in  
 “ this posture of the people the plough is then to move  
 “ on, and when the ploughman has passed by the end of  
 “ the gage, the gager is then to lay it down, but in  
 “ such a manner that the end, number 1, may touch the  
 “ place where the plough entered the ground, and the  
 “ end, number 6, may lie in the right edge of the trench,  
 “ on

“ on the mould turned out. The first man must fix his  
“ eye on figure 1, and, at the same time, the second man  
“ on figure 4; and each of them is to place a plant against  
“ his own figure; and then the first gardener puts down  
“ another at figure 2, and another at figure 3; and  
“ while he is doing this, the second gardener supplies  
“ figures 5 and 6, in the very same manner; and, when  
“ they are supplying figures 3 and 6, the gager is to stoop  
“ down to be instantly ready to take up the gage, in the  
“ manner before directed, and the gardeners must take  
“ care to keep time with each other, that there be no  
“ delay in moving after the plough, in its progressive  
“ motion.

“ The gager is instantly to remove his instrument,  
“ placing the left end close to the last plant, and the other  
“ end as before; and the gardeners are to take care of  
“ the three figures belonging to their office, the first man  
“ managing the three first numbers, and the second the  
“ three last. They may go on very fast in this manner  
“ if they please, and, if they are three honest active men,  
“ no plough can out-travel them in making one bout:  
“ and in this operation it is expected of the ploughman  
“ that he will make his horses step on briskly, which they  
“ may very well do with such light work; for, by the  
“ swifter motion of the plough, there is not only less ex-  
“ pence attending this culture, but the trench is better  
“ cleared of the mould, and left square; and the furrow  
“ is thrown so far to the right, as to be in less danger of  
“ falling back again, which it may otherwise do, from a  
“ creeping, sluggish motion of the plough.

“ Though two active gardeners, or husbandmen, when  
“ the latter are used to the nature of the plants, and placing  
“ them in the ground, may get forwards as fast as the  
“ plough; yet, in order to have the plants properly put  
“ against the figures, it may be better to have them take  
“ their time, and to proportion their work in such a man-  
“ ner, that they may finish by the time the team is at  
“ their heels, in ending the second bout. The gager,  
“ and the two gardeners, need not be afraid of too  
“ much



“ much stooping ; for the gager, when he stoops to put  
“ down his gage, has walked five feet from the last place  
“ where he took it up, and, in fact, is only diversion  
“ and exercise for him ; and the first gardener, when he  
“ stoops to put down his three plants, stepping along at  
“ the same time, in that posture, has six feet of ground  
“ to walk upright upon, which he may dispatch very  
“ nimbly, if occasion requires it ; and the second gar-  
“ dener in like manner : and as a person attends them at  
“ their backs with a basket of plants, they may, without  
“ loss of time, be supplied, while they are walking, and  
“ take less or more into their aprons, or hands, as they  
“ see convenient, and consistent with dispatch.

“ When the gager gets up to the far end of the ground,  
“ he must remember to keep on the furrow-side of the  
“ plough, that is, on that side towards which the mould  
“ is turned ; and the ploughman is now to receive farther  
“ directions how to proceed, when he has gone the two  
“ bouts mentioned before. He was desired to draw out  
“ a very strait furrow when he first went up the ground,  
“ by taking sight of a tree, bush, or any other mark,  
“ exactly in the middle of the ground, and directly op-  
“ posite to the place where he is to set off from, and  
“ which he judges to be in the middle ; or he may use  
“ any method agreeable to himself, provided a strait line  
“ be only drawn out by the plough ; for on this depends  
“ the regularity of all the rest of his bouts, and the  
“ operations of horse-hoeing and ploughing during the  
“ growth of the cabbages. The first furrow being thus  
“ drawn out, the next business is to turn the horses to  
“ the right, and then to measure three feet and a half,  
“ from the edge of the land-side of the first furrow, or  
“ that edge cut with the coulter ; and, making a mark  
“ at the end of three feet and a half, he must put the  
“ share-point in there, and come strait back again, keep-  
“ ing exactly three feet and a half from the far edge of  
“ the other furrow ; and then, as was said before, he  
“ must go a second bout, to turn the mould into the open  
“ furrow where the plants are placed, which he may very  
“ well



“ well do without doing them any harm, if he pro-  
 “ portions the depth of the furrows, where the plants are  
 “ put, to their size, as they will be greater or less, just  
 “ as the season has been for their growth on the beds  
 “ whereon they grew.

“ When all this is performed, and the ploughman is  
 “ ready to set off again, in order to make another bout,  
 “ he is to turn to the right, to draw out another furrow,  
 “ which is to receive the plants, which must stand four  
 “ feet and a quarter from the row of plants now on his  
 “ right hand; to do which he is to consider, that the near  
 “ edge of the open furrow next to him is the breadth of  
 “ two furrows, or eighteen inches, from that row of  
 “ plants; and taking eighteen inches from four feet and  
 “ a quarter, the remainder is thirty-three inches; and  
 “ because the plants must stand on the furrow side, there-  
 “ fore we must add the breadth of the plough, which is  
 “ nine inches, to the above thirty-three, which then will  
 “ make three feet and a half from the edge of the open fur-  
 “ row next to him; and now measuring three feet and a  
 “ half from that furrow, he must make a mark, and go his  
 “ bout, turning to the right, and making the same mark  
 “ from the outermost furrow as before, and so proceeding  
 “ strait back again.

“ He is now to go another bout, to earth his plants;  
 “ and when he has done this, he must still turn to the  
 “ right, and make a halt on the head-land, to consider  
 “ what is next to be done: he knows the edge of the  
 “ open furrow, now on his right hand, and next to him,  
 “ is eighteen inches from the nearest row of plants, and  
 “ that the furrow he is going to open is for the plants to  
 “ stand just two feet from the last row; and therefore  
 “ taking eighteen from twenty-four, the remainder is six:  
 “ and because the breadth of the plough is nine, there-  
 “ fore he must measure fifteen inches from the edge of  
 “ that open furrow next to him, and making a mark  
 “ there, that is the place where he is to set off: and  
 “ when he gets to the far end of the ground, he must  
 “ turn to the right, and measure off fifteen inches from  
 “ the



“ the edge of that open furrow next to him, as he comes  
 “ down again: he is to go another bout to earth his  
 “ plants, and then all things will be easy to him, as it  
 “ will be only repeating what he did before; for as he is  
 “ now going another bout, he is to measure three feet and  
 “ a half from the near edge of the open furrow next to  
 “ him on his right hand, and go strait up; and turning  
 “ still to the right hand, he must measure the same  
 “ distance as he comes down again from that open fur-  
 “ row, and when he has made another bout to earth those  
 “ plants, he measures fifteen inches from the edge of that  
 “ furrow; and when the plants are put into that he is  
 “ now making, and earthed, he then proceeds to measure  
 “ off three feet and a half, which forms the interval,  
 “ and so on earthing, and then measuring fifteen inches  
 “ alternately with the other, for the partitions, till all is  
 “ finished.

“ By which operations the whole ground will be planted  
 “ with two rows, at two feet the partitions, and four feet  
 “ and a quarter the intervals. Thus, then, upon the  
 “ whole of these directions, when he first sets off, and  
 “ gets to the far end, and, turning to the right, he mea-  
 “ sures three feet and a half; when he has earthed the  
 “ plants, he measures three feet and a half, for the next  
 “ bout to receive the plants; and, earthing these, he  
 “ measures fifteen inches for another row of plants; and,  
 “ earthing these, he measures three feet and a half; and,  
 “ earthing these, he measures fifteen inches; and so on,  
 “ alternately, three feet and a half, and earthing; then  
 “ fifteen inches, and earthing; then three feet and a half  
 “ again.”

The farmer will, doubtless, be glad to know what  
 crop he is to expect from his land after all his labour: he  
 has already been informed, that the number of cabbages  
 on an acre, if they have all stood to maturity, will be  
 six thousand nine hundred and seventy: these may be  
 allowed to weigh, one with another, upon a medium,  
 three quarters of a stone each; and if each ox is allowed  
 to eat nine stone a day, that is to say, twelve cabbages,  
 then

then six oxen will live three months on one acre of them ; so that, supposing one acre of turneps, raised in the common method of husbandry, to be sufficient during the same space of time for two oxen, we still may expect, in proportion, three times more benefit from the cabbages than the turneps.

Mr. Randall observes, that the oxen will grow very fat from such food ; and that he has given it to many cows, for a long time together, without perceiving the least disagreeable taste either in the milk or butter ; on the contrary, the milk was rather richer and sweeter ; and both oxen and cows are exceedingly fond of this food. The same may be said of sheep, which improve in their flesh very fast, and grow surprisingly fat on cabbages ; yet has the mutton no disagreeable taste ; so that there is, perhaps, no vegetable which will raise lean sheep of the largest breed sooner than cabbages.

Though, as I have before declared my opinion, I could wish Mr. Randall had interspersed less philosophy in his treatise, or had, at least, separated his philosophical reasonings from the details of his several very useful experiments, yet am I so well pleased with the contents of his work, that I have been at the pains of transcribing his directions for the culture of cabbages as food for cattle, in order to induce some of your farming readers to adopt the practice ; but I must needs own, I should not have given myself this trouble, had not Mr. Randall's essay been, in a manner, solely calculated for the reading of gentlemen, insomuch that I am apt to think, for reasons already mentioned, few farmers will purchase it : it is, however, a great pity that all sensible farmers should not be made acquainted with many valuable facts contained in it.

I am, GENTLEMEN,

Hallifax,

A friend to your work,

August 29, 1764.

EBORACENSIS.



## NUMBER XXII.

*Useful Observations on the best Methods of making Mead.*

GENTLEMEN,

**I** Find that No. XXVII. of your Second Volume, p. 87. contains a method of making mead; but it is not exact, even according to the writer's proportions.

For, having put fifteen gallons of honey to one hundred and twenty gallons of water, he evaporates, he says, by different operations, till it is reduced about a fourth part; adding, that then his copper, of only sixty gallons, contains the whole of the liquor. Now, a fourth part of fifteen gallons of honey, and one hundred and twenty of water, in all one hundred and thirty-five, is just thirty-three gallons and three quarts, when there would remain one hundred and one gallons and one quart, which could not be contained, as he says, in his sixty-gallon copper. But as that paragraph concludes with one half being to be evaporated, so neither then would his copper of sixty gallons hold the other half, which would really be sixty-seven gallons and two quarts. The truth seems to be, that the honey was over-looked in the calculation.

I should be glad of a reason why he does not take off the scum in boiling, unless that he depends on there being but barely enough to form a thick head, (which I much doubt) because his honey is to be first clarified; of which operation also I should be glad to be informed, as, on asking an apothecary now in my house, he tells me, it is done by melting the honey in a pot, set in another pot full of water, over the fire, and taking off the scum as it rises in boiling; a thing impracticable for general use, in large quantities.

Now, to clarify that quantity of honey, would not only require a vessel that will hold full fifteen gallons, but another with water also in it, in which the former must be put over a gentle fire, with its rim above the  
water;

water; and it seems necessary that honey should be scummed in making the wine, or be first purified, because otherwise it will be mixed (not to say any thing of filth) with wax, (an improper ingredient) which, being lighter than honey, will rise to the top, and ought to be scummed off in boiling.

His method of keeping it is certainly right; and I could have wished he had not changed his terms upon us, in the other way he recommends too of making the wholesomest mead for common drinking, by putting weights, instead of measures, (an additional and considerable difference in the trouble;) and am clearly of opinion he bottles his liquor too soon.

Number LXIII. of the same Volume, page 208, gives us an easy, frugal way of making honey-wine; nor would I be an advocate for the yeast, if it induced a disagreeable beery flavour; but it is well known a very little serves to bring on a fermentation, which is necessary to make any wine, or any liquor, vinous. But surely the editor might have spared his note, since it is said to have kept a year good, unless he opines the cold and wet summer of 1763 be not, in future, a sufficient test.

I yesterday tasted a bottle of mead of my own making, which, next October, will be eighteen years old, and, by a memorandum for 1746, find the honey was not clarified, but scummed whilst it boiled about an hour; of which forty pounds was put to ten gallons of water, barrelled when cold, and, with a few spices, had only *one* spoonful of yeast, was bottled at the year's end, and tastes now strong of the honey.

As some of your correspondents may ascertain, from experience, which is the best, or favour the public with a better way than either, I will only observe—

The first method is (by measure) a quart of honey to two gallons of water, and boiled, but not scummed;

The second (by weight) a pound to a gallon and half, boiled as the first, and not scummed;

The third, a pound of honey to a quart of water, not boiled, nor scummed;



The fourth, a pound to a quart, as the third, but boiled and scummed: and I find Mr. Warder, of Croydon, in Surry, in his *True Amazons*, or *Monarchy of Bees*, boils his mead in the proportion of a pound of honey to a quart of water.

I am, GENTLEMEN,

Your humble servant,

August 16, 1764.

A. T.

## N U M B E R XXIII.

*A Method of enabling Seamen to bear better the Inconveniencies of Hunger and Thirst\*.*

GENTLEMEN,

**H**OMINES ad Deos, nulla in re propius accedunt, quam salutem hominibus dando, says the judicious Cicero. All attempts, therefore, to relieve, or in the least alleviate, any of the many calamities incident to frail mortals, justly claim every hint which can, in the least, conduce to so laudable a purpose, from every one, in every degree, endued with that God-like beneficence, the true spring of such endeavours. I then, without further apology, send you my opinion of the consequences of the use of opium, in enabling seamen the better, and longer, to bear the inconveniencies of hunger and thirst, when, by any accident, deprived of, or reduced to great scarcity of, meat and drink.

The following account of the effects of opium I take from the communicative and learned Dr. Alston's dissertation on opium, in the Medical Essays, Vol. V. Opium affects first, and principally, the nerves to which it is applied; next, such as are more immediately connected, or communicate, with them; then those which serve for sensation and voluntary motion; and last of all, by consent, the whole nervous system.

This impression, action, or influence, on the nerves, differently affects the *sensorium commune*, and the mind, according

\* We are greatly obliged to the kind correspondent who sent us this piece, and acknowledge that in a commercial view it is comprehended within our plan, and merits in itself the attention of the public. N.

according to its degree, and the nature and function of the nerves primarily acted upon.

The primary or first observable effect of the mechanical impression, or action, of the narcotic part of the opium on the nerves, is the relaxation of their fibres.

Whether this relaxation is the physical action of opium on the nerves themselves, or only the effect of the impression thereby made on the *sensorium commune*, that is, whether opium is immediately, or only mediately, the cause of it, I shall not positively determine. It may perhaps be as difficultly explained, how the action of narcotics on the nerves causes a paralytic relaxation, as how the images painted on the retina cause vision. There is a *non plus ultra* in all physical enquiries.

Opium rather coagulates or thickens, than dissolves or attenuates, the blood: this he confirms by several experiments.

The action of opium is very analogous to that of wine, or vinous spirits, excepting only in so far as it depends on the quantity requisite for the same effect; for wine is the best remedy for the inconveniencies following the disuse of opium. They also agree in this, that vinegar is the best antidote to both, as the most effectually, of any thing hitherto known, recovering people from the bad effects of either\*.

The first effect of opium appearing hence to be the relaxation of the fibres, as far as its influence reaches, the consequence of that must be, that the relaxed glands must allow of a greater discharge of the liquors secreted by them: hence, when its influence becomes universal, all the secretions, especially the perspiration, would be soon so much increased as to endanger the life, by a loss of so much of the most fluid part of the blood, if its coagulating quality, together with the less, or impaired, action of the relaxed fibres, did not, at the same time, render the motion of the blood less quick; whence it comes in less quantity to the glands, and what reaches

\* If we mistake not, the late Doctor Mead in these cases prescribed the juice of lemons. E.



reaches them is, perhaps, by its thickness, rendered unfit for secretion, its particles being now too big, or adhering too closely together, to enter the secretory ducts. By repeating the use of opium at proper intervals, the blood may be preserved for some time in this state, perhaps without any diminution of its quantity, as its thickness confines the circulation mostly to the larger branches of the blood-vessels, or rather to those admitting the red particles of the blood only.

Thus they may continue for some days less sensible of a loss of strength.

This reasoning is partly confirmed by the effects of sleep, between which and those of opium there seems to be a near resemblance; for it is known that moderate sleep encreases the perspiration, as is generally thought, by relaxing the fibres. During a moderate sleep there is not a greater loss of perspirable matter than what is consistent with health; and the fibres of the muscles, which had been over-stretched, or too long continued in action, have time to recover themselves: hence the person wakes refreshed, alert, and fit for action. If the sleep is too long continued, the loss by perspiration becomes too great, and the vessels still more relaxed; whence an universal lassitude. The most fluid part of the blood being discharged by a too-long-continued perspiration, there is, perhaps, a less quantity remaining fit for supplying the loss of animal spirits, or the nervous juice; whence a continued inclination to sleep, and a disability of action. If the sleep is immoderately continued, the relaxation becomes so great, that the heart and arteries have scarce strength enough to force the blood into the secretory capillary vessels; whence the circulation being now carried on through the larger vessels, there will less of its fluid part be lost by secretions. As the motion of the blood will be hence more languid, and the attrition less, the mild salts of the blood will not become so soon acrid: hence people may live longer asleep without nourishment, and without a total loss of strength, or the blood's being much vitiated, than when awake, and in action. That people have lived



lived asleep many days without nourishment, might be confirmed by many instances.

As opium first affects the stomach and intestines, there the relaxation must be greater; whence, in both, a more plentiful discharge of their natural mucus, which guarding the extremities of the nerves, now rendered less sensible, from being so readily affected by any sharp humour contained in the stomach, a less sensation of hunger ensues. The same obtaining, in some degree, in the glands about the throat and mouth, or in a greater degree if the opium is chewed, thirst is thereby prevented.

Though opium may thus for some days keep people nearly in their wonted strength, yet, if we attend to the nature of the blood, and the effects of its continued circulation, without a recruit of fresh matter, we may readily prognosticate that death must soon be the consequence; for, notwithstanding the thickness of the blood, the languid circulation, and diminished secretions, there must still be a constant loss of the thinnest part, or minutest particles, of the blood, by urine, perspiration, &c. The neutral mild salts, abounding in the blood, being now deprived of their diluting fluid, will, by the attrition of circulating, and heat of the body, become sharp and very acrid, if not tending to an alkaline disposition: and the mild oil, the natural defence of the vessels from the ill effects of acrimony, will now, by the continued heat of the body, and the action of these acrid salts, be dissolved into a putrid, highly-corrosive ichor; whence the destruction of all the finer vessels, and at length death.

These dreadful consequences can only be prevented by a supply of a mild diluent, wherein there is matter fit for repairing the daily loss the body sustains.

In long voyages many accidents may deprive the unhappy seamen of materials, on board their vessel, which can yield such a supply. As there is scarce any condition of men more deplorable than theirs, who in health have the constant prospect of an unavoidable death, joined with the anguish of a continual hunger and thirst, and the  
many



many pains and inconveniencies thence arising, so nothing can better excuse the trial of uncertain experiments, than the most distant prospect of their least relief.

It is evident, beyond contradiction, that in the surface of our bodies there are an almost infinite number of absorbent vessels, which receive into them matter, the particles of which are small enough to enter their orifices: thus the urine soon smells of spirit of turpentine, held on the palm of the hand; and thus mercury, externally rubbed on the body, soon raises a salivation. When a person is, by exercise, or long fasting, brought very low, or his vessels much emptied, it is certain that, after a few hours rest, the body weighs heavier; which must arise either from an addition of matter from the air, by the absorbent vessels, or else from a difference in the specific gravity of the body, the blood and juices being, by rest, rendered more dense and heavy. It can scarce be supposed that the difference of the specific gravity can amount to twelve ounces, as was observed by Keil in one after violent exercise.

As it seems then more than probable, that there is an addition of matter to an exhausted body, even from rest, in the air, how much more may it be expected if the whole body is immersed in water, a fluid of the minutest particles, which, by their weight, readily insinuate themselves into the smallest interstices, and which, by their figure, are best fitted for carrying with them any nourishing matter mixed with them! Most men have experienced the pleasure of bathing in a hot sultry day; and, upon observation, I believe, have found a more than ordinary excretion, by urine and saliva, after bathing. Whether that proceeds from the quantity of water absorbed, or from a greater quantity of blood being sent to these parts, free from the immediate pressure of the water, I shall not determine. Bathing greatly quenches thirst; which may be partly owing to the greater quantity of humid vapour on the surface of the water, than is at a very little more height. That there is a manifest difference in the humidity of the air, even in a height of eighteen or twenty feet,

feet, appears evident hence, that, at low water, a person standing on the shore at Blackwall can see nothing of the marshes on the other side, which are considerably lower than the intermediate bank; whereas, at high water, he can discern the sheep and cattle feeding on them, the rays from them being then much more refracted, coming through a now denser medium. Hence we may account for many living long in a small boat without sustenance.

When in Ostend, in 1739, I received from our consul, at that place, a printed account of all the remarkable occurrences which happened to him upon his being shipwrecked upon a desert rock; which I have since lost; but, if I remember right, he observes, that they who were most constantly employed upon the wreck, and in searching for sea weeds, were the last, and least, afflicted with the scurvy; or, in other words, that they who were constantly employed in the water, though in a very cold season, received such a quantity of it into their blood, by the absorbent vessels of their legs and arms, as carried off these acrid salts, which, in the less active, who kept themselves dry, produced these grievous complaints, by him called the scurvy. It may be here objected, that granting the absorbent vessels admit water, yet the salt received with it, being so difficult to be overcome by the powers of our bodies, or assimilated with the other juices, will rather add to the acrimony, or sharpness, before feared. I answer, that if salt water, filtered through a stone, or fine sand, is free from salt, much less is it to be expected that the orifices of vessels, so very small as those of the absorbents are, can admit salt.

It seems evident, by many experiments communicated to the royal society, particularly by Dr. Woodward, that water is only the vehicle of nourishing matter to animals and vegetables. He has likewise shewn that such matter is contained in water; nor will it appear a paradox to any one who considers, first, what a great part of animal and vegetable bodies are, by various causes, carried into the air, and return from thence in dews, rains, &c. into the



sea; and, next, how many animal and vegetable bodies dissolve in, and are mixed with, water. That there is such in sea water, appears further from its putrefying upon stagnating, or being confined in close vessels; for pure water will continue sweet for years, as observed by Mr. Boyle and others; and salt is known to prevent putrefaction: its putrefying must therefore proceed from animal or vegetable substances mixed with it, these being the only bodies capable of putrefaction. From the abundance of such matter I take that light observed in the waves of the sea in a dark night, when agitated by the winds, or breaking against the shore, to proceed; for it is greatest where large rivers, loaded with such matter, empty themselves, and where fishes are in greatest plenty: whereas in the main ocean, or seas destitute of fishes, it is scarcely seen. Supposing that water, fraught with nourishing matter, may be received into the body, by the absorbent vessels, as a mild diluent, it will preserve the fluidity of the blood, and afford a vehicle for carrying off the too acrid salts by urine, &c. and, as conveying nourishment, it will, in some degree, help to supply the daily loss of matter. I know not whether frequent bathing might not be serviceable for preventing the scurvy in long voyages, even where they are not in want of water; as it might help to carry off these acrid salts, which, in that disease, generally settle in the capillaries under the skin, and occasion the spots and pains so frequent in that complaint.

I have been assured that a surgeon, bound to the East-Indies, prevailed on his captain to put some tartar in every cask of water, with a view of preventing the scurvy, by keeping the body open; which was attended with the desired effect; yet such was, at that time, the universal prejudice to acids, that others could not be prevailed upon to follow the example, not daring to act contrary to a generally-received opinion.

Another great advantage of bathing may be, that as sea water is always colder than the body, it will add to  
the

the force, or spring, of the vessels, and thereby prevent so great a relaxation as might be the consequence of too long an use of opium\*.

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## N U M B E R XXIV.

*A Remedy recommended for Cattle blown, or hosed †, by eating Red Clover.*

GENTLEMEN,

WHEN I wrote to you a few days ago upon the culture of bear in Ireland, I had not leisure to touch upon the subject which is the foundation of this letter, and which I now trouble you with, not from any merit that I would be thought to arrogate to myself, but really with a desire of being well informed of a fact, I think is of great importance for all mankind to know, at least, all such as are concerned in country affairs.

We are too apt to pay but little attention to the calamities of others, until they come home to ourselves; then it is that our feelings are touched, our minds are awakened, and we are eager for information how to remove the evil which attends us: whereas, did we sympathize more with the misfortunes which attend our neighbours, we should have a better chance of removing the like evils when they approach ourselves.

It is universally known that red clover is a dangerous food for horned cattle; and particularly, when under heavy dew or rain, it is a destructive poison. In the last spring I felt the effect of it by an accident ‡, having lost a

Q 2

bullock,

\* Upon the whole, this writer seems to recommend to seamen, who are so unfortunate as to be destitute of provisions, the moderate use of opium, (which every man might constantly carry about with him in sufficient quantities) and at the same time bathing in, or moistening their bodies with, salt water. E.

† See a remedy for hosed cattle in our Second Volume, p. 104.

‡ I call it an accident, for the preceding year I sowed the field with trefoil: upon walking into the field at the time of sowing,

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bullock, which I valued very highly for his good qualities in labour, by his eating clover; and when I came to him I felt the loss more, for the ploughman who used to follow him was standing by him, who, upon seeing me, with tears in his eyes said, “Ah, Sir! there he lies!” “the best companion that ever poor man followed.” I found, amongst the other cattle which were in the field, three cows also affected; those I ordered home, and the rest to another pasture. My prime minister, the shepherd, knew of no remedy but that of driving them about, which I complied with, as it appeared to me rational enough; however, as the cows were near their time of calving, that could be done but sparingly.

I knew it to be a practice in England, in the like cases, to pass a knife into the animal's body; but neither my shepherd, or any one else, could inform me in what part the incision should be made, to give vent to the pent-up air. In this situation I reproached myself severely for concluding every body knew what I find they do not, which, added to my never having met with the like accident before, made me negligent as to informing myself of the operation: and, although this affair happened near four months ago, I have not yet met with one person who can tell me; though many gentlemen, upon its being first mentioned, say it is common; but when pushed to explain it, my enquiry is disappointed.—But to return to my cows; thus I was obliged to leave them for the night, directing the shepherd to sit up with them, with orders to call me, should they be worse; accordingly, about three o'clock, I received his summons, when two of the cows were better, but the third, he was sure, would die.

The creature appeared to be extremely ill, swelled to a great degree indeed: two large arteries, passing from the lower points of her shoulders along the neck, beat in a  
surprising

I observed one of the sowers had got clover seed, upon which I ordered him to return it, and take trefoil: he assured me he had not sown two pounds. I mention this to shew how small a quantity may be destructive. The field is twenty-four English acres.

surprising manner; two veins, passing from the under side along the belly, were as turgid as ropes; a very high fever, with a wild gazing and distension of her eyes. But what caught my attention most, and which at that time appeared unaccountable to me, was, her being much more swelled on the near, or left side, than on the other, *i. e.* on the near side of the back bone there was a rising considerably above the back of the beast. I was surprised to see air fluctuating within her skin, still seeming to distend her more and more.

Upon pressing my fist smartly in the cavity between the hip bone and ribs on the near side, I did imagine I could feel the paunch, or great receptacle of the intestines, distended to this immoderate size.

Of this fact I wanted to be satisfied, being myself unacquainted with the anatomy of the parts: I therefore went to a butcher, who answered my questions to a confirmation of my former imaginations; upon which I returned with a determined resolution of passing a pen-knife into that part of the cow, about three inches below the back bone, and about four inches from the point of the hip bone: but in my return I considered the cow, as she really is, a valuable one; and as I knew not how the blood-vessels lay, I own I began to have some doubts how to proceed; upon which another experiment occurred to me.

I have by me (and which no gentleman, or farmer, should be without) a pewter syringe, which holds three quarts.

For the use of my family and cattle, I generally keep by me an assortment of drugs and medicines. I examined my stock, and found I had carraway-seeds, juniper-berries, bay-berries, chamomile-flowers, and coriander-seeds: of these, in my hurry, I took a handful each, not regarding the weight: the seeds I bruised in a mortar, and, with the flowers, threw them into three quarts of water, which I reduced to two by boiling, then strained it, and dissolved in it, of Glauber's salt, and common salt, half a pound each: to this I added near a pound of butter, as a substitute



substitute for oil, (which I had not) and half an ounce of chemical oil of anniseed.

Making this composition of a proper warmth, I injected the whole into the cow by way of clyster.

She very soon began to emit great quantities of wind, which infected the whole air of the cow-house and yard, in which the aromatics were distinguishable enough; and in about two hours she was as well as ever she was, and soon after brought me a fine calf, which I am now raising.

I do not offer this as a remedy that can be practised in general, unless people will be careful to keep the materials by them, and above all the syringe\*, which is absolutely necessary for horses and black cattle, in many cases besides the one before us.

I know not whether my ideas be right; but I take this effect of clover upon black cattle to arise from a fermentation, which, I presume, is excited by the construction of their intestines, or from something peculiar in their digestion: we know that fermentation will excite air, and, I conceive, the animal heat rarefies that air to the great distension which we see these animals will swell to, even, as I am told, until they really burst.

I have before said this remedy is not offered as a general or certain one; but I am moved to offer it, with a hope that some capable person will furnish us with an accurate information of the operation by the knife, as I know it is practised in England with certain safety and success: and I here call upon such of my countrymen as are acquainted with it, in the name and behalf of the public, (in which I hope, gentlemen, you will join me†) that some of them will inform us in what part of the animal's body they enter  
the

\* This is the instrument I added, amongst others, to your Dictionary, and is the thing I wished you to enforce the general purchase of. I gave two guineas for mine in London; but they are not to be had ready made, at least were not ten years ago.

† We should take it as a particular favour if any gentleman, or farmer, who is acquainted with the practice of stabbing cattle for this disorder, will describe to us the nature of the operation. E. R.

the knife, and whether they find it necessary to pass any tube in afterwards, to keep the orifice open for the freer passage of the air; as, in tapping for the dropsy, a tube is left in the wound, by which the water runs off.

I am warm, gentlemen, in my desires for this operation being universally known, as it is, in truth, a matter of great consequence, particularly as the use of clover is increasing every day; and when it appears in your *Museum*, I shall take care to propagate it here, for the benefit of this kingdom.

Since I saved the cow, which is the foundation of this letter, I have lost one by another accident. I most carefully opened and examined her intestines, and I find the paunch lies on the near side, just as I imagined; and I am so well satisfied of the safety, that if I should be so unfortunate as to have any cattle in the same situation, before I see my request complied with by some generous-spirited correspondent to your work, I shall, without fear, proceed to pass a knife just in the place I described before; but I do not recommend it to any other person till they have practical authority, which will, in all cases, be superior to any theory.

I am, GENTLEMEN,

Ireland,

Your well-wisher,

August 18, 1764.

An ENGLISHMAN.

## N U M B E R XXV.

*An Account of a sure and expeditious Method of Reviewing a large Flock of Sheep in Commons, or extensive Pastures; with an Improvement thereon.*

GENTLEMEN,

**M**ANY landholders have not the benefit of keeping their sheep in enclosed grounds, but are obliged to let them ramble over a vast extent of pasture.

Others, who have all enclosed grounds, have yet very extensive sheep-walks, and the extensiveness is thought a benefit. I shall not offer to discuss this question here.



The point I would now consider and remedy, is the apparent difficulty of a sheep-master's knowing when he has his full flock of sheep in these extensive grounds; for it is notorious that sheep change their position in a pasture so often, even during the time of counting, that a sheep-master, though *diligent* and *experienced*, will often be at a loss to know the true number, as he may easily count the same sheep twice, and, for fear of so doing, may omit the counting of some.

To remedy this striking difficulty and inconvenience, there is an ingenious invention of a clergyman in this part of the world, which I think highly worthy to be communicated to the public in your *Museum*, &c. I had, indeed, an intimate personal acquaintance with this clergyman about twenty years ago; but various circumstances in life have *relaxed*, if not *dissolved*, that acquaintance, which yet I can renew, in order to obtain a more full account of his *sure* and *expeditious* method of reviewing his flock of sheep, if you are not satisfied with that which I am now able to give you, as follows.

He has ten marking-irons, expressing the nine simple figures, and a cypher. With these he marks all his sheep in a series, *viz.* 1, 2, 3, 4, &c. as they come to hand, on both sides, I suppose. Whether he has any method of connecting these small marking-irons, so that they shall express the *simple* figures composing the *compound* ones at a due distance from each other, I know not; but I should think he might have such method, and, upon the whole, not lose *much*, if *any*, time; for one dip in the pitch, and one marking, would then do; whereas, in the other way, he must *dip*, and *mark*, as often as the number has simple figures.

His sheep go, at least a considerable part of the year, on a *large* and *rich* common. He goes often himself to review his flock, for exercise and amusement, and has a little pocket-book in his hand, in which all the numbers of his sheep are written fairly. He holds a pencil, I suppose, in his hand; and as he sees any sheep in his ride, he makes a mark over-against the corresponding number; and

and thus, when he has gone through the common, he knows whether any of his sheep be wanting. If any one of his sheep *dies*, is *sold*, *killed*, or *removed*, or *lost* beyond hope of recovery, he has nothing to do but to strike the number out of his list, and when the erasures become numerous, to make a new list. Besides other obvious advantages of this method above the usual one of counting, there is one very material, *viz.* that a sheep-master, who is not willing to be a drudge in reviewing his sheep, may suspend his employment as long as he pleases, and resume it without disadvantage; he may converse with any person whom he meets; he may attend to other business; whereas the person who counts, must keep the sheep *continually* in his eye, and go through his work *at once*, or he might as well not begin it.

I will not, gentlemen, urge that the numbers on the sheep are a good *mark of distinction*, consequently of *property*, and not easily defaced; for, though they are so at present, yet, if the method here recommended takes place, they will every day become less and less distinguishing: however, with additional marks, they will be always useful, even to prevent robbery; for no man will venture to steal and keep a sheep when he cannot prove that he ever had a number so high as that which he keeps.

I am, however, apprehensive, that there is one deficiency in the method above recommended, *viz.* that a black-lead pencil's mark, set against a number in the lower part of the book, may easily be defaced by the hand while it makes a like mark over-against another number which is in a higher part of the book, especially when the list has been gone through *once* or *more*, and the paper, or other materials of the book, are no longer *clear* and *clean*.

To remedy this obvious inconvenience, I would have a circle of brass, or other metal, marked into an hundred equal divisions, and little moveable\* nails corresponding to each, to be brought to the edge of the circle when any sheep is found. If the sheep's master has two, or

VOL. III. No. 13. R more,

\* The nails must be *moveable*, but not *glid*, lest they *slip down*, or *back again*, without the help of the finger's-end, or nail.

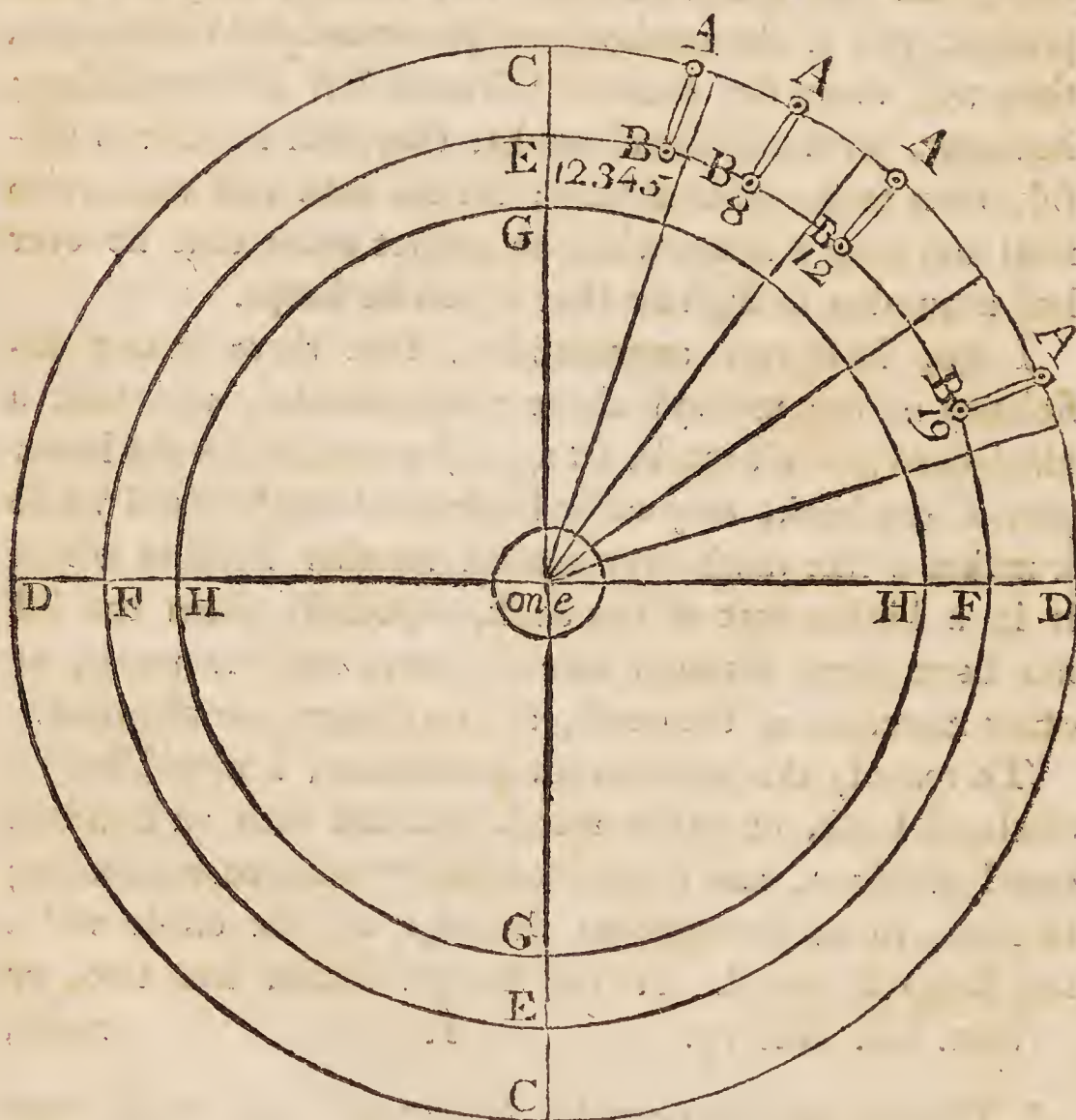


more, hundreds of sheep, he may have as many circles marked in the centre, with the number of the hundred. These circles may be made at a trifling expence, and will last a man his life. If two circles are thought troublesome, one may be divided into two hundred parts, with as many corresponding nails; and I think this circle much more convenient on one account, *viz.* that the sheep-master will not have the trouble of taking out, and putting by, one circle while he uses the other, or being incumbered with both circles, if the sheep of the respective hundreds go mixed. An ingenious workman will make a circle of the same size with that hereunder delineated, with two hundred equal divisions, or more. I have added delineations of the circles, with explanations; and am, GENTLEMEN,

Your communicative correspondent,

Easter-Eve, 1764.

THOMAS COMBER, jun.



EXPLICATION,

## EXPLICATION.

The circle, C D, is the utmost, in which are fixed one hundred nails of brass, &c. so as to move in the grooves from A to B, being riveted below the circles, so as not to drop out.

E F, E F, is the interior circle, to which the nails move.

G H, G H, is the innermost circle.

Betwixt the *interior* and *innermost* circles are the numbers, the corresponding nails moving down to those. Thus to denote number 5 found, the nail is brought from A to B, and so on.

The word *one*, or a capital figure, at the centre of these circles, may signify that this circle is appropriated to denote the sheep marked in the first hundred, and so on.

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## NUMBER XXVI.

*Of the Necessity of joining Theory and Experiment to promote true Science in general, and Agriculture in particular; with some Remarks on the Advantages of a liberal Education in Enquiries about Agriculture, and a particular Application of these Remarks to the Case of Ploughing-in Wheat Stubble, in order to sow Beans.*

GENTLEMEN,

**I**N the last age, and indeed many preceding, *theory* alone bore the name of *philosophy*. These were the reign and triumph of *fancy*! but at that æra, which may be justly called *the revival of philosophy*, *experiment* regained its due honours. Men began to ask themselves, with our famous ethic poet, “What can we *reason*, but from what we *know*?” A *rational philosophy* has thus been raised from *experiment*; the *Newtonian* in the *material* world, the *Lockian* in the *immaterial*, or *spiritual*. The one is called *natural philosophy*, the other *metaphysics*, or things which



we should study after we have gone through the *material part of nature*.

Thus have *theory* and *experience* been joined in an *amiable alliance*, and its good effects are discovered throughout the whole reign of nature. Not only *astronomy*, and the more sublime parts of science, have been advanced by this natural alliance, but the more practical parts of science have been cheered by its influence.

In this enlightened age, which has tasted so long and deeply the happy effects of this conjunction, shall any one cause a divorce between those which the God of Nature may justly be said to have joined together? I hope not. Yet as one can never be too attentive to preclude all attempts to create a misunderstanding betwixt man and wife, by insinuating the great superiority of the one to the other, so in the alliance just now mentioned.

I must confess, that as I should be sorry to see *theory* exalted on the ruins of *experiment*, so I am concerned to see *experiment* magnified as self-sufficient and quite independent of *argument*.

I need not tell you, gentlemen, that I think very highly of agriculture: all my letters to you on this subject sufficiently evince this point. I esteem agriculture as a *principal source* of happiness, both to *individuals* and the *public*. It gives *domestic ease* and *plenty*; it affords a fund for *charity*; it gives nerves to the government both in peace and war; it is the *parent* of *commerce*; it is the *nurse* of the *fine arts*.

To understand *agriculture* tolerably, we must know the nature and influences of the heavens; the component parts of the earth: we should be pretty good masters of *zoology* and *botany*; we should be acquainted with *mechanics*, *hydrostatics*, &c. The most liberal education may be well employed in this comprehensive science; and though much less talents may make men *servants*, less will render them miserable *masters* in this *noble art*.

The nature of things will, indeed, confine *farmers* to a *very narrow* sphere of education. But if they have sense,  
they

they will always consider the *truly*-learned as their *masters*, by whom to be instructed they should esteem an *happiness*. They may frequently afford the *experiment*, but they are seldom able to *reason* upon it. To reason properly upon an experiment, requires much greater abilities than they are *generally* masters of. It requires a very comprehensive view of things, and a most nice attention to all circumstances, and the ballancing one thing against another, in order properly to ascribe the effect to its true cause, or (as more usually happens) to its true causes, and to estimate how much every cause contributes to the effect.

Thus to judge of causes and effects, is the result of a *liberal education*, whether that education be *private* or *public*. This ability to judge is *generally* gained in an university; yet may it, no doubt, be gained by good parts, leisure, and close attention to books and things, any where.

But because this ability of judging atight of causes and effects *may*, and sometimes *is*, obtained out of the limits of an university, must we conclude that it may be gained any where without those means which are employed in an university? Surely no.

My brother *Clericus* has observed well (as he always does) in your Second Volume, page 230, of farmers, that “ their education is, *in general*, narrow, and they have “ no leisure time to enlarge their ideas by subsequent “ reading.”

I must add, that I agree with you entirely, gentlemen, in thinking that it is one principal part of the usefulness of your work, that it will afford instruction to plain farmers, who have had a very narrow education, and have little leisure for reading; and I think you judge well in admitting into your work pieces which may instruct such even in *common* things. (See the note in Vol. II. p. 318.) But when such men as may, with propriety, read your work, or even contribute to it by a *simple account* of their *experiments*, which they should leave others of much greater abilities to reason upon, assume the stile of *masters* and *teachers*, and without being able to reason *at all* upon experiments, conclude what they please from them, and  
often



often make very false deductions, sometimes directly opposite to what they should make, they defeat the design of your work, the *instruction* and *improvement* of themselves and the public.

I would wish, gentlemen, that *more farmers* would give accounts in your papers of all the various methods of agriculture which they use, the varieties of their soils, manures, instruments, and the return of their crops. If they make any experiment out of the common road, let them relate it with all possible circumstances. I dare say, gentlemen, that no reader of sense will be disgusted with the *plainness*, or even *awkwardness* of their stile, or their *prolixity*. I had rather read a page more, than want *one* circumstance of an experiment, because that *single circumstance* may authorize conclusions directly contrary to what would have resulted from it without such circumstance.

If farmers will be content to act thus within their sphere, you will never want, gentlemen, correspondents of *liberal education* and *enlarged minds*, who will make the proper use of materials thus prepared, by just reflection on circumstances, &c. and give that due praise to farmers which they deserve.

“*One fact*” (says a certain gentleman) “is worth a dozen arguments, particularly in what relates to agriculture.” If *one fact*, related with *all* its circumstances, and *nicely* examined, prove a point, a dozen dozen of subtle arguments can never prove the contrary. But to conclude from a dozen bare facts, related without enquiry into their causes, what contradicts a *single clear argument* deduced from the nature of things, is idle, and especially in agriculture, where many causes, and many latent ones too, contribute to one effect.

No fallacy is more common, or more pernicious, than this, which concludes, that because things exist *together*, the one must be the *cause* of the other. Let us not, gentlemen, disgrace reason, philosophy, and agriculture, by talking of “one fact out-weighting a dozen arguments.” *Facts* are *arguments*, if they are any thing, and well-formed arguments will never be found inconsistent with *facts*.

Lawyers



Lawyers may talk with more propriety of *facts* outweighing arguments, than we husbandmen can. *Facts* are the only things which lawyers have to do with. If a thing can be proved *fact*, the sentence of law follows, be that sentence ever so inequitable in the particular case. If the lawyer can produce an *adjudged case*, that is considered as a *fact* by which a court will generally think itself obliged to proceed. Lawyers always declaim most against *argument* and *reasoning*, when they find it most unfriendly to their client.

But *good husbandmen* should be influenced neither by *facts*, nor *authority*, against *clear reasoning* and *argument*. Indeed they may be afraid that they mistake the *nature* of the fact when it seems to contradict the principles of reason, just as divines rightly conclude, that points which contradict the grand principles of *natural religion* and *reason*, can never make part of a revelation from God, can never be facts. Let us, gentlemen, apply this *general truth* to the examination of a *fact* or two alledged by your correspondents.

Your correspondent, "A Vale Farmer," in Number LXXII. of your Second Volume, says, "If ever we let the (wheat) stubble remain uncut till bean-season, and plough it in, the consequences are fatal; it causes the earth to lie hollow; the bean plants to fall down; the sun and air get at the roots, and prevent the plant thriving; and the crop is always very greatly lessened: besides, the stubble, which with us is very strong, clogs the plough-share, and gathers up in clods, which are a sure and a fatal shelter for many noxious insects." Page 235, 236. He adds, "These are *facts*, not *arguments*." He need not surely have told us so. We should never have guessed that there was any appearance of *argument* here. But if he could have bestowed a little *argument* on the *fact*, he would have more advanced the cause of truth.

To begin with the *fact*, I will at present admit it, because the *Vale Farmer* may be an *honest man*, though, I am sure, he is no *master of reason*. To his *fact* I may justly oppose



oppose the much more extensive *fact* of all the country, through which the wheat stubble is *ploughed-in* before sowing of beans, without experiencing any inconvenience of the sort he mentions. In all this track of corn country, throughout which the wheat stubble is ploughed-in before the sowing of beans, I never once saw the bean plants fall, unless cattle or persons broke them down, or suffer any of the inconveniences he enumerates. How then shall we reconcile *facts* seemingly irreconcilable, but by that *sober use* of *argument*, which our *Vale Farmer* decries?

This difference of fact in the *Vale* of *Bucks* from the fact in all this extensive track of northern country, may arise from *one* or *both* of the following causes, *viz.* that the *Vale farmers* leave their stubbles too high, or cover their seed-beans too slightly: in either case the plants will be exposed to all the inconveniencies your correspondent mentions; and, indeed, the leaving of stubble too high will be attended almost necessarily with the other cause of miscarriage, the covering of the seed-beans too slightly. *Stubble*, even *strong wheat stubble*, is (past all contradiction) an excellent manure, and contributes greatly to *lighten strong land*, (as one of you, gentlemen, has candidly confessed, in note \* to page 438, of your First Volume) and such your *Vale* correspondent allows his to be. Yet, notwithstanding this truth, the stubble may be left so long, as to afford no firm footing for the beans in solid earth.

I have argued for the usefulness of stubble as a manure, only on supposition that it is left as we leave it in the North, about six or seven inches high, with our sickles. If the *Vale farmers* leave their stubble so long as to be fit for thatch, which your correspondent says they do, this mismanagement must be productive of one of these evils, *viz.* either hurting the bean-crop, by affording it no good footing, or robbing the soil of a *good manure* by mowing off that stubble, which, left at a proper length, would have *lightened* and *enriched* the soil. The clogging of the plough, raising of clods, and giving of harbour to insects, are all consequences of the same mismanagement.

I hope, gentlemen, that your *Vale Farmer* may now see that a *little sober argument* might have been of use to himself, and his brethren, if they are not too obstinate to be instructed.

But to leave no room to doubt of the *usefulness* of stubble as a manure, when ploughed-in after a *wheat crop*, I will here, gentlemen, cite a famous experiment of an author beyond exception, one of whose experiments, founded in a knowledge of nature, and exactly recorded with *all necessary* circumstances, is worth much more than a dozen dozen of arguments, however specious, against so reasonable a practice.

“ I said, that the stubble was plucked up, in order to  
 “ prepare the bed for being sown,” says Mr. *de Chateau-*  
*vieux*. “ This shewed me *how much* stubble helps to  
 “ enrich land. When this bed was sowed, and the corn  
 “ sprung up, I ordered the furrows which were made be-  
 “ fore winter, next to the outward rows, to be opened  
 “ for about half the length of the bed, and the stubble  
 “ to be put into them, and covered with earth; conse-  
 “ quently it was laid in the ground which was cultivated,  
 “ and in that part of it where the plants were to extend  
 “ their roots. As the quantity of roots collected there  
 “ was pretty great, I concluded, that the effect of the  
 “ stubble ought to be *much more visible* in that place than  
 “ it can be in fields, where the ploughman buries it  
 “ as *chance* directs. In effect, that part of the bed be-  
 “ came *much finer* than the rest; the plants produced a  
 “ greater number of stalks; and there is no room to doubt  
 “ that the stubble was an *excellent manure*.” For this  
 passage, see Mr. *Mills*’s Husbandry, Vol. II. p. 271, 272;  
 or, for the original, see *Du Hamel’s Culture des Terres*,  
 Tom. V. page 427. Indeed Mr. *Mills* appears to have  
 been so struck with this passage, that he has given us it  
 not only in the course of Mr. *de Chateauvieux*’s experi-  
 ments in the place above cited, but also in his First  
 Volume, page 253, 254, and with circumstances which  
 highly deserve notice: for, in the first place, Mr. *de*  
*Chateauvieux* affirms, that his stubble was so much stronger  
 Vol. III. No. 13. S than



than that raised in the common way, that he often met with tufts of twenty, thirty, and more stalks, which, like bushes, stopped his walk: and, secondly, that he found his stubble *almost whole* at a year's end, and some not consumed at two years end: and, thirdly, that he found the roots of plants of wheat remarkable for their beauty, *quite interwoven* with tufts of stubble of the last year's wheat. See his Tom. IV. page 288, 296, and Tom. V. page 427.

Mr. *Mills* judiciously remarks, (page 255.) “ that these  
“ observations on the stubble left above ground are justly  
“ to be extended to the roots left below it, which, *gradually*  
“ *decaying*, not only keep the particles of earth  
“ asunder, but become an *excellent manure*.” And now, gentlemen, let your correspondent, the *Vale Farmer*, defend the wretched practice of himself and brethren, who rob their ground of this excellent manure.

I am, GENTLEMEN,

East-Newton,

Your servant,

July 16, 1764.

THOMAS COMBER, jun.

P. S. Pray correct the following erratum in one of my letters, Vol. II. page 350, line 27: for, “ when the  
“ aftermath is *cut*,” read, “ when the aftermath is *eat*.”

## N U M B E R XXVII.

*On the best Method of evaporating the Juice of the Sugar-Cane  
in the West-Indies.*

GENTLEMEN,

**I**N a former letter, (see Vol. II. Numb. III. page 15.) I pointed out what appeared to me to be errors in the present method of boiling the juice of the sugar-cane, and have hitherto delayed complying with your request, concerning the manner of evaporating its juice, in hopes that some person, better skilled in that subject, would have supplied my deficiency.

As I cannot give directions founded on experience, whatever I may say can be deemed but as hints to be pursued by gentlemen on the spot. There experiments may point out errors, and suggest a practice founded on such rules as theory alone could not have probably discovered.

I would recommend, in the first place, that, as the juice is pressed out of the cane, whites of eggs be mixed with it, or any other glutinous substance, which, adhering to the impurities in the juice, may carry them to the surface, as the liquor approaches towards boiling.

The instant that the crust, formed on the surface, breaks, or, in other words, the juice begins to boil, the whole should be skimmed off with care.

Coppers of the usual form will answer this purpose; because the juice need not continue in them longer than is necessary to free it from such impurities as rise to the surface, which should be constantly skimmed off. As soon as the juice is come to a proper degree of purity, it should be poured into vessels of another kind.

If we attend to the purpose of farther boiling, we shall find that it is only to evaporate the watery particles of the juice, so as to bring it to such a consistence, as that the saccharine particles may concrete into sugar.

In order to obtain this end, the surface of the liquor should be enlarged as much as possible, experience having evinced, that the larger the surface of a fluid is, the evaporation is the greater, the heat being the same.

The coppers for the future evaporation should therefore be as wide as possible; and the surface being thus enlarged, the heat may be proportionally diminished to produce the like effect. As liquor is more easily heated, the shallower it is, and as the evaporation is proportioned to the heat, the coppers should be shallow as well as wide.

A heat, sufficient to produce a considerable evaporation from such a vessel, may be given by several small fires, placed at convenient distances under it; for the copper



need not now be brought to a red heat, as is the present practice. No part of the juice will be singed, or burnt, by a heat thus conducted, and the concreted sugar will be much cleaner and clearer; for even the syrup will remain clear to the last: and it is also probable that the sugar will concrete into larger grains.

As boiling is known to render all liquors less apt to ferment, the juice, after having been once boiled, may, perhaps, be put into cisterns, to be there evaporated by the sun, without danger of its fermenting. If this is found practicable, a great saving might be made in fire and attendance, especially in a country where the heat of the sun is so great. The cistern must be covered with an awning, to be drawn over it in the night, and in rainy weather, to prevent the dew and rain falling into it; and this awning may be so contrived, as to be raised in the day, so as to throw a reflected heat on the liquor, thereby to encrease the evaporation.

From the inconsiderable loss of water in deep ponds, it appears, that the evaporation caused by the heat of the sun is not so great as is commonly believed, unless the water be so shallow, or clear, that the rays of the sun can pass through it, and warm the bottom of the containing matter. When this is the case, the air, in contact with the bottom, is warmed, and, rising upwards, carries off the adhering water; or the water itself, being heated, becomes specifically lighter, and rises into the air.

We may be taught from hence, that the liquor intended to be evaporated in a cistern should be very shallow; and, that the warmth which it contracts may not be too suddenly checked, the supply of fresh juice should be very gradual.

As there is found to be a mutual attraction between similar bodies, it is probable, that, as the proportion of saccharine particles encreases, they may attract one another more powerfully, and by that means favour the evaporation of the water. A gentleman, who had the charge of a salt-work, observed, that the water evaporated

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faster

faster when there was a quantity of salt deposited in the bottom of the ponds. The same may be expected from sugar.

When water is exposed to a free current of air, much of it is carried off by the air, especially if the air is dry, or in what may be called an absorbent state; for, with regard to water, air acts as a kind of sponge, retaining more or less of it, the heavier or lighter the atmosphere is. Thus, when the barometer rises high, a great quantity of water is raised into the air, as may be observed from the quantity carried off the surface of the earth during such rise.

There is more water carried off by the air, or wind, in a cloudy day, when the barometer is high, than there is by the heat of the sun in a clear day, if the barometer is low; hence the countryman's prognostic of fair weather, as soon as he sees every puddle dried up. This is an observation which may be of much use in salt-works, wherever the play of the barometer is great: but in the torrid zone they are deprived of this rule, because the barometer varies but very little there. I have therefore made the rule to them the air's being dry, of which they may inform themselves by means of an hygrometer.

This absorbent quality of the air shews the advantage of carrying off the steam of boiling, or hot, liquors; for if there is not a free current of air to carry off such steam, as soon as the air over the containing vessel is overloaded with watery particles, it will constantly drop the particles that are most cooled, and thus greatly retard the evaporation. This should therefore be particularly attended to in all sugar and salt works.



## N U M B E R XXVIII.

*On the Use of Manures to Land, and whether good Tillage is not alone sufficient.*

GENTLEMEN,

**I** Am a subscriber to your useful publication; and though partly a stranger to the practical part of husbandry, yet I have read some authors on that subject; and, having met with a few doubts from some, and contradictory opinions in others, (which, from the nature of the subject, must ever be the case) I write this purposely for my own information and a few others, hoping that you will either clear up my doubts by a note of your own, or else that some one of your correspondents will be so obliging as to favour me therewith.

Some of our books in husbandry seem to condemn manure as producing more weeds than benefit to land, and make tillage, that is, the benefits of the atmosphere, alone the cause and source of vegetation: of this opinion is the author of the New System of Agriculture, the ingenious Mr. Tull, and a late respectable author, who has had experience, as well as judgment, in husbandry.

On the other hand, the author of a small publication, in 1762, with a seeming propriety indeed, ridicules, in this particular, the notion of our modern improvers: and, though he owns he would not be inattentive to the necessary article of tillage, yet by no means would he be forgetful of the great, if not superior, benefits derived from dung\*.

Now,

\* We know that great benefit may be derived from the prudent use of dung; but in excess it is poison, and, if used without precaution, certainly encreases the number of weeds in the land. It is our opinion, that a moderate quantity of dung, with good tillage, is the most successful practice; for when land is well tilled, particularly in the new way of husbandry, the weeds have not time to grow. E. R.

Now, gentlemen, as the end of all management in husbandry is the providing food for plants, it should seem as if good dung should contribute very largely towards it, as it is said to raise a fermentation, and to contain both salts and oils. Nor does it appear to me that rotten dung can produce weeds; for, after it has once arrived at a corrupted state, it must surely be divested of those pernicious qualities: but herein I want better information\*.

The other matter may, perhaps, be more properly enquired of from the chemist or philosopher, than, perhaps, from a country farmer: but I have often seen it said in our authors on husbandry, when treating of the virtues of dung, that lime and marle (for instance) attract acids and oils from the air.

Now, gentlemen, what I beg your assistance in is, to know whether these two particular manures have those inherent qualities lodged in them, so as to draw down, or attract, (in an active and powerful capacity) the acids and oils contained in the atmosphere†.

I do not pretend to doubt the truth of it; for, on the contrary, I believe it to be true; but being neither a chemist nor philosopher, I fly to the assistance of the learned, as I think it a matter of some consequence to be known, whether manures, in general, do attract the kind influences

\* It is very certain, that, even after dung has passed through the highest state of fermentation in which it is generally used, there will remain in it a capacity of vegetating the seeds of some sorts of weeds. E. R.

† Lime raises a fermentation in the earth, thereby promoting a separation of the particles, and disposing it to receive all possible benefit from the atmosphere: yet do we, by experience, know, that earth, pulverized by any mechanical operation, will be equally disposed to receive the same benefit: however, we must not thence conclude that lime is of no service, except merely contributing to disunite the particles; for, by the fermentation which it excites, the vegetative qualities of the earth are put in motion, and disposed to afford the plants, which fall in their way, the nourishment they may require: nay, perhaps some additional richness is given to the soil by the lime; for we find, that let a plant be growing in earth ever so well pulverized, it will grow with redoubled vigour if some water is applied to it in which lime has been dissolved. E. R.



fluences of the atmosphere in a more powerful degree than a well-loosened pulverized earth would do without its aid \*.

I doubt not your publication of this to oblige others, as well as,

Your constant subscriber,

Yorkshire,

And humble servant,

August 20, 1764.

Y. X.

## N U M B E R XXIX.

### *Arguments against mowing Wheat.*

GENTLEMEN,

**A**S the love of novelty seems to be the reigning taste in agriculture, as well as religion, I, who am a lover of old and approved methods, cannot come into many of the new-fashioned ways of husbandry which are now-a-days taught: and, first of all, I am much displeased with those who strive to introduce amongst us the mowing of wheat, because it tends to no real advantage, either to the nation in general, or the farmer in particular: yet, from what has been said about it, one would be apt to think that those who so much recommend it, must do it out of some motive or other for the public good; they must imagine that labourers are likely to become scarce, or that greater quantities of wheat are now sown than used to be, or that the new-fashioned scythes are much better for use than the old-fashioned reaping-hooks; all which notions I shall endeavour to make appear to be erroneous.

First, we are in no danger of wanting labourers, because numbers of those who rented small farms must become such, or starve, especially if a stop is not put to that method of adding farm to farm, and house to house, which

\* Every thing in excess is bad; a moderate use of manure we would, by all means, recommend. E. R.

which the scriptures pronounce a curse against; for, if this iniquitous practice continues, we shall soon have but one large, over-grown farmer in every little village, and then the rest must be dependent upon him for bread; therefore it is not a want of labourers that will induce us to make use of the scythe in mowing wheat\*.

And, secondly, If any person will but be at the pains of looking over the multitude of corn fields that have been lately enclosed, he may soon convince himself, that we have no need to introduce the new-fashioned scythes among our wheat, because more of that article is sowed than used to be; for wherever a corn field hath been enclosed three years, it will be found that not one half of it is in tillage, and, in many places, not a quarter: nay, on enclosing, some landlords tie their tenants from ploughing above half their lands, and some, on finding grass-seeds to lay the ground down with, tie them from ploughing any without express leave from the landlord himself; by which methods many large tracts of land, which used to employ great numbers of labourers, when in tillage, are, on their being enclosed, managed with very few; therefore, instead of finding out new ways to reduce the quantity of labourers, we should rather strive to discover more neat and safe methods in managing our corn, although it should take a greater quantity of hands than usual: for which reasons the hurrying and slovenly method of mowing corn ought not to be put in practice in this country.

Thirdly, the old-fashioned way of reaping is much better for use, to the farmers in general, than the new-fashioned one of mowing; because, if wheat is full ripe,

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\* We are sorry to acknowledge that this complaint of our correspondent is too well founded, nothing being more common than to unite three or four farms in one parish to gratify one over-grown land-engrosser: this evil is grown so enormous of late, that it is well worth the attention of the parliament; and we hope it will, next sessions, be taken into consideration. O.



(and it always should be so where full and bold corn is desired) the striking of the scythe against the the hard straws must knock out a deal of the best seed; whereas, by our old method of reaping, little is lost, it being handled with caution, and laid down gently with great care, therefore is more easily picked up to be bound, and much neater than can be done out of the swarth; and thus there is more saved to the farmer by reaping than he can get by having his corn cut down in less time than usual by the Hainault scythe.

Besides, if the wheat should be lodged, as is often the case, especially in enclosures, (and we seem as if we should have nothing else soon) then a scythe would make terrible slovenly work amongst it, not only by breaking off the ears, and knocking out the corn, but it would be impossible to bind it up strait, regular, and neat.

Nay, let the wheat stand ever so well, yet reaping is preferable to mowing, especially in this island, where the weather is almost as changeable as the people's tempers; for, by reaping, the ears of our corn are laid so regular, that, when they are bound up in sheaves, they will be much fitter to stand against the wet than when they are bound up after the scythe, because the ears in one will be all at the end of the sheaf, but in the other many of them will be in the middle, which, in a wet time, will spirt, and so spoil the whole\*; therefore reaping is to be preferred before mowing, as being the neatest, safest, and best method; and, although it is not new-fashioned, yet, I hope, the old-fashioned farmers will adhere to it till a better, safer, and neater method can be found out. On the continent let them use the scythe and welcome, because there their weather is not so unsettled as ours; and  
when

\* We cannot be of opinion that the arguments made use of by our correspondent are convincing: we leave him, however, to be answered by some our kind contributors, who may, perhaps, make it appear to him, that he judges too hastily. Our impartiality will always prompt us to attend to whatever may be said on both sides of any important question. Q.

When we are as certain of our harvest weather as they  
are, then I will give my consent to imitate them\* ;

Who am, GENTLEMEN,

Warwickshire, Your humble servant,

August 5, 1764.

AN OLD-FASHIONED FARMER.

## NUMBER XXX.

*A Letter from John Mills, Esquire, respecting the Burnet  
cultivated by Mr. Rocque.*

GENTLEMEN,

**F**EW people may, perhaps, be more liable to err than  
I am. None *can* be more willing to *acknowledge* their  
errors; more sincerely thankful to those who shall be so  
kind as to point them out, or more ready to amend them.  
To endeavour to render myself an useful member of the  
community, in the almost only way to which a very in-  
firm state of health has reduced me, is my principal aim  
in writing; and therefore I cannot but accept, with a  
grateful heart, every thing which may help to guide me in  
that laudable pursuit.

Mr. Comber observes rightly, (see page 22. of this  
Volume) that, at the time of writing my account of  
“ the *important* and *now-favourite* subject of burnet,” I  
did “ labour under something which looks like *confusion*,”  
but which, I hope, does not quite merit “ so offensive a  
“ term as *contradiction* ;” for if he had been pleased to  
read attentively the last paragraph of my article of *burnet*,  
(page 291. of my Third Volume of Husbandry) he would  
have seen that I there spoke with greater certainty than I  
had done in the preceding part of that subject. I was,  
indeed, at first at a loss to ascertain the species of Mr.  
Rocque’s burnet; and, unfortunately, the sheet preceding  
T 2 the

\* We shall be much obliged to this correspondent if he will  
send us the articles he mentions, and we take this opportunity of  
informing him, that we grudge no expence we are put to by  
our correspondents. O.



the 289th page of my Third Volume was printed off and published with my Twenty-sixth Number, (for page 289. begins the Twenty-seventh Number) before it was in my power to satisfy myself in that point, as I was enabled to do whilst the sheet beginning at page 289. was actually printing; whereupon I added the last paragraph above referred to. It was not till then that I obtained some of the seeds of Mr. Rocque's burnet; and upon comparing them with Mr. Ray's description, in his *Historia Plantarum*, a work upon which I rely greatly, I judged Mr. Rocque's burnet to be the *pimpinella sylvestris major sanguisorba* of that author.

Here I voluntarily correct myself for having said, in page 291. of my Third Volume, that I judged it so to be from the *squareness* of its seeds; whereas I should have expressed myself more intelligibly, and more properly, if I had said, that I judged it so to be from the four ribs which run prominent along that seed. Mr. Ray's description of the seeds of this species of burnet being, that they are *semina tetragona*; *Hist. Plant.* and again, in his *Synopsis Stirp. Britan.* he calls them *semina quadrata*. He likewise gives to this plant, *viz.* the great burnet, *flores spadicei*, of which Mr. Rocque's field affords abundant instances, in the beautiful red colour of the flowers of many of his plants.

What I take to be the *pimpinella saxifraga*, burnet *saxifrage*, which is the *boucage* of the French, has a *semen striatum* (Ray's *Synopsis*, page 213.); an oblong, smooth seed, with channels along its surface, but without the ribs of the *sanguisorba* seed; and this I also apprehend to be the distinguishing mark between these two.

In a letter with which I have lately been favoured by the society established by the states of Brittany, at Rennes, for the improvement of agriculture, arts, and commerce, a society composed of truly-intelligent patriots, and in whose correspondence, and approbation of my system of husbandry, I think myself highly honoured, is the following passage, which confirms Mr. Ray's account of these two plants.



“ You give to this plant four names \*, *pimpinella*,  
 “ *poterium*, *sanguisorba*, and *tragoselinum*. We have two  
 “ French names which answer to these four Latin names,  
 “ according to the different acceptations of different  
 “ authors, *pimprenelle* and *boucage*. Our *pimprenelle* is the  
 “ *poterium* of M. Linnæus, who ranges it in his twenty-  
 “ first class; the *pimpinella* of Mr. Ray; of Tournefort,  
 “ pl. 68; the *pimpinella sanguisorba* of C. Bauhin, pin. 160.  
 “ Our *boucage* is the *pimpinella* of Linnæus’s fifth class,  
 “ the *tragoselinum* of Tournefort, pl. 163, and the *pim-  
 “ pinella saxifraga* of C. Bauhin, pin. 159.”

Mr. Rocque’s burnet is very far from being all of the  
 same kind: for whoever examines it attentively will find  
 that there is a considerable difference in it, not only in  
 the colour of the flowers, but also in the colour, shape,  
 and appearance of the plants themselves; so that, to a  
 nice botanist, they might, perhaps, be divided into a  
 greater number of species than these two †. But as I do  
 not

\* “ Vous donnés à cette plante quatre noms, *pimpinella*,  
 “ *poterium*, *sanguisorba*, et *tragoselinum*. Nous avons deux noms  
 “ François qui repondent à ces quatre noms Latins, suivant  
 “ les différentes acceptions des divers auteurs, *pimprenelle*, et  
 “ *boucage*. Notre *pimprenelle* est le *poterium* de M. Linneus,  
 “ qui la range dans sa 21me classe; la *pimpinella* de M. Ray,  
 “ de Tournefort, pl. 68; la *pimpinella sanguisorba* de C. Bauhin,  
 “ pin. 160. La *boucage* est la *pimpinella* de la 5me classe de  
 “ M. Linneus, le *tragoselinum* de Tournefort, pl. 163, et la  
 “ *pimpinella saxifraga* de C. Bauhin, pin. 159.

(Signed)

“ DE LIVOYS,

Rennes,

“ Sec. de la Soc. d’Agr. des Arts,  
 “ et du Comm.”

Le 13 Juin, 1764.

† On a careful examination of some of the seeds of the burnet  
 cultivated by Mr. Rocque, we find that they are contained in a  
 rough, oval capsule, having four prominent ridges, frequently  
 dentated, yet oftener with smooth edges. These ridges divide  
 the outward surface of the capsule longitudinally into four nearly-  
 equal parts, the spaces between the ridges being rough or cellu-  
 lated like a peach stone. On removing this rough capsule, there  
 appear two little seeds, somewhat resembling the kernels of an ap-  
 ple, but much smaller, each being separately enclosed in a thin te-  
 gument, in contact with, but not attached to, the outward husk,  
 or capsule; which being of an oval form, as already mentioned,  
 the



not lay claim to any skill in the more curious parts of that useful and agreeable science, as I have repeatedly declared in the course of my book of husbandry, I shall always *acknowledge* myself indebted to whoever shall take the trouble of pointing out my errors, in that or in any other part of my work, and shall gladly correct them in my next edition, as Mr. Comber *kindly* advises. And I shall also, in justice to the public, give *gratis* to the purchasers of my first edition those amendments, *if*, which I do not yet apprehend will be the case, their *bulk*, or *purport*, should be such as any way to affect, or interest, the patriotic encouragers of my labours. In the mean time, if any emendations should be pointed out to me, *worthy* the notice of the public, I shall be thankful for them, and promise to add them, if they come in time, to my Fifth Volume, now, indeed, on the point of being finished at the press; and which, including in it a very copious index to the whole work, will be the last of my present labours.

Mr. Rocque having now saved a considerable quantity of the seeds of his burnet, Mr. Comber, or any other person desirous to be yet more thoroughly satisfied, may, by sending to him for some of his seed, and raising the  
plants

the small contained seeds must necessarily have each one side flat, and the other convex. The situation of the seeds within their teguments may be best seen by cutting one of the capsules transversely with a pen-knife. The parcel of seeds from which the above observations were made, appeared to be all alike, excepting the very small difference already mentioned, that the ridges in some were dentated, in others smooth; so that Mr. Mills's suggestion, that Mr. Rocque's plants are not all of the same species, seems to be but illfounded, as the difference in the colours of the flowers, &c. may most probably proceed from seminal variations, by no means constant. We should have said something of the size of the capsule, but this varies according to the nature of the soil on which the plant has been raised that produced it; some of the capsules we have seen not exceeding in size a grain of mustard-seed, others being as large as a small pea. We thought it necessary to give ourselves this trouble for the satisfaction of our readers, who may, many of them, be well pleased to be made acquainted with the seed of the true burnet.  
E. O. R. N.

plants themselves, easily have ocular information of what concerns them.

As my work has lately been attacked in a public manner by the *Critical Reviewers*, I take this opportunity, gentlemen, of informing the world, through the channel of your *Museum*, that, besides the approbation which the society of Britany has conferred on my system of husbandry, I have had the honour of being unanimously, and merely on account of my performance, elected a member of the royal society of agriculture at Paris, and of the patriotic society of agriculture and arts at Berne, as the strongest mark which they could give, and I esteem it the highest I could possibly receive, of their approbation of my labours. And what would certainly flatter the vanity of any writer on the subject of agriculture is, that one of the most distinguished and judicious practical *husbandmen* in Europe, the illustrious M. Lullin de Chateaufieux, of Geneva, has been pleased, in a letter written (not to me, but) to one of the principal merchants in London, and which is *now* in the hands of Dr. Templeman, secretary to our excellent society of arts, &c. to call my performance *un ouvrage infiniment estimable*. Whilst my labours are thus applauded; whilst I have the honour to reckon among my correspondents in matters of agriculture the marquis of Turbilly, M. Du Hamel du Monceau, M. de Montaudouin, all members of the Paris royal academy of sciences, and many others of high rank and most distinguished merit, I surely shall feel but little what *such* critics may say.

I am, GENTLEMEN,

Your most humble servant,

September 18,

JOHN MILLS.

1764,



## NUMBER XXXI.

*An Estimate of the Expence of building a Stove for raising Pine-Apples; together with the annual Charges for Tan, Labour, &c,*

GENTLEMEN,

**T**HOUGH the subject of my letter may not be of the greatest importance to the public, yet I doubt not but many gentlemen, residing at some distance in the country, may be glad to be rightly informed of the real expence attending a stove for raising of pines. This has induced me to make the following particulars public, and which are as near the truth as possible, having been very exact in the accounts, on purpose to prove that the expence is much less than is generally imagined, as the idea of a large expence attending it has frequently hindered many persons from enjoying this pleasure and amusement.

A stove, forty feet long, and twelve wide, is the proper size for one fire-place, and contains as much air as one fire will properly warm: I shall therefore calculate my expences for one of that size, and particularly as it will produce about one hundred and fifty pines a year, which is fruit enough for a moderate-sized family.

The height in front is three feet, and the back part about seven feet.

The front, one end and roof to be of glass, the other end brick, where should be a room about twelve feet square, and it ought not to be less; for the convenience of laying the fuel, and for making the fire.

As to the dimensions of the flues, &c. it is not necessary here to insert them; but I will beg leave to refer any gentleman, who wants to build one, to that ingenious brick-layer, Mr. Salter Field, of Walton upon Thames, who has shewed great skill and judgment in building several\*.

The

\* We are well pleased with every opportunity afforded to us of bringing forth concealed merit to the notice of the public. E.

The expence of building such a stove will be about eighty pounds, supposing all the materials to be new, and at the prices given in London and its neighbourhood; but if you have the conveniency of a wall ready built to erect it against, it will save about fifteen pounds.

The price of the plants will be according to their sizes, from two or three shillings each to ten or twelve, and entirely depends on how long you will wait for fruit, and whether you will buy such as will produce fruit of only one pound weight each, or two or three pounds; but about fifty pounds will stock it properly at first to have fruit immediately.

*The yearly Expence as follows.*

	<i>l.</i>	<i>s.</i>	<i>d.</i>
Eight hundred bushels of tan to fill the pit at first, at three half-pence <i>per</i> bushel — —	5	0	0
Sixteen loads carriage — — —	0	16	0
Three chaldrons and a half of coals, at thirty-six shillings <i>per</i> chaldron — —	6	6	0
Two hundred bushels of tan more, to keep the bed level with its former height, at three half-pence <i>per</i> bushel — — —	1	5	0
Four loads carriage — — —	0	4	0
Filling the pit with tan, and planting the pots, two days, two men, at two shillings a day each —	0	8	0
Stirring the tan up, and adding fresh four times more, at <i>ditto</i> — — —	1	12	0
The time in attending the fires, watering, &c. is worth at the most eighteen-pence a week, which comes to — — —	3	18	0
Repairing the windows, painting, and white-washing — — —	1	11	0
Total — — —	21	0	0

The ashes from your house, and rubbish from your garden, or, where you can get peat or turf cheap, will abate something in coals; and I think there are few places



in England where all the articles together will cost so much: thus you will have one hundred and fifty pines of one pound and a half weight each, one with another, for less than three shillings a-piece; and with good management most of them will weigh two or three pounds a-piece, especially if you plant only your prime crowns and suckers.

Besides pines, you may have vines come through the walls, and nailed to the roofs, and on the flues French-beans, strawberries, and cucumbers.

As I am making several experiments for the farther improvement of managing stoves, I may, perhaps, trouble you with such of my remarks as I think will be acceptable to the public\*; but before I send you mine, should be glad to see those one of your correspondents promised some months ago; and am, GENTLEMEN,

Middlesex,  
September 17, 1764.

Your's,  
ANANA.

## NUMBER XXXII.

*On the Culture of Horse-Beans in a light Loam, and the Benefit of hoeing Crops in general.*

GENTLEMEN,

**M**ANY farmers imagine that it is in vain to attempt getting a good crop of horse-beans in a gravelly loam, taking it into their heads that nothing but a stiff loam, or a clay, will yield any quantities, worth attention, of this useful vegetable.

Let me, with your permission, endeavour to undeceive them; for be assured that horse-beans, with proper culture, will grow very well, and yield a pay-rent crop, though they are sown in a sandy or gravelly loam.

I should

\* An account of this correspondent's experiments will oblige us much, and we should be glad to hear from him as often as he has leisure or inclination to write. E.

I should not assert this, was I not by experience warranted to do it, for I have often raised them on such land to my perfect content.

When I practise this husbandry, it is frequently after a crop of wheat that I sow horse-beans.

The first thing I do immediately after harvest is, to clear the field of the stubble as much as possible, because if I did not, it would, when buried by the plough, contribute to make the land, already light, more hollow, and would also, as I have often found, make the bean-plants root-fallen: what I mean by root-fallen is, that when the plants become tall and weighty, the roots are apt to give way, and the plant come to the ground; in which case I have generally found a tuft of stubble near the root, about which the fibres of the roots would twist themselves, instead of penetrating into the soil in search of subsistence and nourishment.

For these reasons, I say, I always get rid of the stubble before I turn up the eddish.

In the first ploughing, I make the ploughman go as deep as he can, that he may lay the exhausted and tired soil, on the surface, at the bottom of the furrow. After this, I harrow it down smooth, and leave it for about a month.

When the month is expired, if the weather suits, I sow the whole surface of the land with lime flaked, after the rate of twenty bushels on an acre.

I then plough the field in broad lands, or wide stiches, harrow it again down smooth, and leave it for the winter.

The first week in February I plough the land once more flat, harrow it smooth down, and have it planted by hand with eight pecks of horse-beans; immediately after which, a moderate-sized roller is passed over the field.

The beans are planted with dibbles, in double rows, with intervals three feet wide, and the partitions between the rows are only one foot wide.

When the beans are about two inches above the ground, I sow over them, by way of top-dressing, about ten bushels of foot, and cause the partitions to be hand-hoed:



as for the intervals, I mean the spaces of three feet wide between the double rows, I clean them with a small plough, I have for the purpose, drawn by one horse : with this I go one bout in each interval, throwing up two small furrows against the beans, and leaving a trench in the middle.

In about three weeks afterwards I throw back these furrows, and plough as near as I can to the beans, so as not to injure their roots, but cutting off a few of their fibres gives me no concern : there will now be a trench on each side the interval next the beans.

My next business is to harrow the intervals with a small light harrow, in order to make it as fine as possible ; which fine pulverized earth I now throw back to the roots of the beans, to which it will lie very close, and affords them abundance of nourishment.

I give only one ploughing more to the interval, and that too without an earth-board, as it is only meant to disturb the weeds, and give nourishment to the crop ; and if any more weeds appear, I endeavour as much as possible to destroy them with the harrow ; but if this will not do, I am always ready to be at the expence of having the whole field hand-hoed,

It scarcely need be mentioned, that during all these operations with my small plough in the intervals, I take care with the hand-hoe to keep down the weeds in the partitions between the rows.

With this culture I have seldom failed of good crops ; and if the summers happen to be wet, my crops have often been surprisngly large, and I have got a great deal of money, as, after a wet summer, beans always sell well ; and indeed it is natural they should, as most of the crops on damp stiff lands, are ruined, and they are seldom sown on any other.

I do not think I lose any thing by allowing three feet intervals, as the bean-stalks are stronger, and blossom lower, by this practice ; and in the rows they are as thick as they can stand, which I think best in a light soil.

When

When my beans are hooked, I pull up the stalks; and my next crop is, for the most part, barley, of which I generally, in this way, get at least four quarters an acre.

I sow it on three ploughings, for nothing loves a fine tilth better than barley: and indeed it receives great benefit from the frequent culture that was bestowed, the year before, on the beans, during their growth.

My fourth crop is often peas, on which I bestow a little very rotten dung; and after the peas, without any fallow, I get the land in order for wheat, which I sow with no other manure than coal-ashes, wood-ashes, or foot, which ever I can best get.

It may be asked, perhaps, why I do not dung my wheat: to this I answer, that my opinion is, that dung breeds weeds by the multitude of seeds of noxious plants which it brings on the land. For this reason I rather chuse to lay on a moderate quantity of dung before I sow my peas, as the frequent hoeings which the peas require contribute much to destroy the weeds, which would otherways fatally infest my wheat-crop.

This may, perhaps, be new doctrine to many of your readers; yet I have a very good right to approve of it, as it has so well succeeded with me.

I am, gentlemen, in general, very fond of hoeing crops; and I am certain, that were they more introduced into common practice, there would be no occasion ever to let land lie fallow; for the chief use of fallows is, to clear land of weeds; and this may be much better done by encouraging the culture of hoeing crops.

The turnep-husbandry is a very great improvement; but it is not so well known, or so universally practised, as it ought to be; and, what is scarcely to be imagined, there are in England farmers, to my knowledge, who sow turneps, and will not be at the expence of hoeing them. How absurd this practice is, need not be pointed out: for my part, I am astonished when I hear of their having a single turnep in return for their seed.

It is in vain to attempt persuading some farmers to alter their old customs, though you should make it ever  
so



so evident, by reasoning, that it is for their interest so to do: they fill their heads with imaginary losses, and nothing but ocular demonstration will convince them of the utility of any practice that may appear strange to them.

It is a great pity gentlemen of fortune do not reside, as their ancestors used to do, on their estates, instead of flocking to the metropolis to spend their fortunes in idle and extravagant luxuries and vanities. I am now forty years of age, have always lived in affluence, yet never was a month together in London in my life. I wish all your gentlemen readers could say as much.

I am, GENTLEMEN,

With great respect,

Your humble servant,

August 31,

1764.

JOHN MOSS,

A yeoman of Kent.

## N U M B E R   X X X I I I .

*A Letter from Farmer Mitchell, on the White-Scour in Sheep,  
with a Remedy.*

GENTLEMEN,

**I** Have been from the beginning a constant purchaser of your work, which I much approve of, particularly as it affords us farmers an opportunity of laying our miscarriages and misfortunes before our brotherhood, that they may, in their practice, take care to avoid the like errors.

It is this motive has induced me now to trouble you with a letter; for having last year suffered a great loss in some sheep of mine which died, I thought I could not do my brother farmers a piece of better service than to let them know how it happened.

You must know, gentlemen, I had a fine piece of turneps, with which I intended to flush up five score sheep; but just before they were turned in, I was under a necessity  
of

of going up to London, on account of a confounded law-suit I then had, and still have, on my hands.

This obliged me to leave the care of my farm to a nephew of my wife's, whom I keep as an upper servant; and a sober honest lad he is, though, to be sure, this time he was a little out in his politics.

But to continue my narrative, this lad, to whom I had often preached lessons of oeconomy, thought he would be as prudent possible, and not suffer the sheep to waste any of the turneps.

In order to effect this, he hurdled off a plat of them, and turned in five score sheep to eat them on the land: when they had eat up the leaves, and scooped the roots, he sent into the plat a couple of my men, who forked up the remainder of the turneps, consisting chiefly of scooped shells, in the hollow parts of which the urine and dung had lodged, so as to make them a nauseous meal to the poor sheep; here, however, were they kept by my wife's kinsman till they had, through absolute hunger, been obliged to eat up the greatest part of the fragments.

Thus far no very great damage was done, only the sheep lost flesh, instead of gaining fat: but the next step the young man took was indeed fatal; for after they had been for some time half starved, by being kept to the dirty food already mentioned, he very unadvisedly turned them suddenly into a fresh bite of turneps, and what was still worse, they were turned in before the dew was off the plants.

The consequence was, that the sheep were immediately seized with the gripes, the white-scour, and flux, which carried off forty-two of them before my return, and would, in all probability, have killed the remainder, had I not applied a speedy remedy.

My first business was to take them from the turneps, and putting them into a dry up-land pasture, I gave them some of the sweetest hay I had, which I generally reserve for my cows.

As no time was to be lost, I instantly got two pounds of rice, which I put into eight gallons of water, and  
adding



adding an ounce of ginger grossly beat in a mortar, a quarter of an ounce of cloves, the same quantity of aniseed, and half an ounce of cinnamon (which, by the bye, I found it hard to get, they wanting to sell me *cassia* instead of it) I had the whole put into a small copper we use when we wash our linen, and boiled it till the quantity was reduced one half.

I then ordered my man to strain it off, and when it was so far cooled as to be no warmer than milk from the cow, I threw in a quart of good common gin, and mixing the whole well together, I gave each of the sheep a dose of half a pint, and continued giving them half that quantity, morning and night, till they were recovered from their danger, which was in a little more than a week, for the medicine had so good an effect, that I lost only five more, which happened to be too far gone.

I send you this account, gentlemen, that you may publish it for the benefit of my brother farmers; and I hope they will meet with as much success in the application of the medicine as I did.

It will, however, be necessary for me to acknowledge that I never knew this medicine given by any body but myself; neither did I ever before try it; but the emergency of the occasion prompted me to endeavour to think of somewhat that might stop the ravage of the disorder; and, as it happened, I made a lucky hit.

For my own particular part, I am not so fond of oeconomy as to make my sheep eat scraps of turneps; and whenever I put them into a fresh bite, I always allow them cribs with sweet hay, which I imagine corrects the raw and watery juices of the luscious turnep.

I should be glad if some of your numerous correspondents would turn their thoughts to the various distempers with which sheep, and other cattle kept by farmers, are subject: we might then hope to have some remedies published (for every disorder) which we could depend on; and this, I must tell you, gentlemen, would be a great acquisition in husbandry; for I assure you, from my own experience, that very few of the receipts to be met with

in such printed books as I have seen are of any efficacy; so that I had almost determined not to read any more on the subject of husbandry, till a neighbour of mine sent me one of the proposals for your work, and I found it was to be written by gentlemen and farmers at large, who were experienced men, and not by gentlemen authors who derived all their knowledge from reading. This it was induced me to become a purchaser; and I like it so well, that I wish every farmer would buy it, for I am sure he will always find a crown's worth of knowledge in every twelve-penny Number: I have, at least, hitherto done so.

I should also be very glad if some of your correspondents would say a word or two about rye, which, though not equal to wheat, is a good grain; and I believe it would have been better for the nation if more of it had been grown last year, when the wheat was almost all *speared*. I want somebody to give me an account, from experience, of the culture of the naked oat, which I am told is very much cultivated in Cornwall; and they say it is a good grain for many uses: besides, it would serve to vary our crops; which, you know, we reckon a point of good husbandry\*.

I am, GENTLEMEN,

Suffolk,

Your humble servant,

August 28: -

W. MITCHELL.

## NUMBER XXXIV.

*On feeding down Wheat with Sheep, with its Advantages and Disadvantages pointed out, together with some necessary Precautions in the Practice.*

GENTLEMEN,

**P**ERMIT me to communicate to your readers, for their benefit, I hope, a little of the experience I have in many years acquired.

VOL. III. No. 13:

X

Being

\* We should be much obliged to any of our correspondents who will be kind enough to give this honest farmer the information



Being now grown old, and retired to spend the remainder of my days in this city, I trouble myself but little about the practical part of farming; yet did I some years ago occupy a considerable tract of ground in Norfolk.

I shall, for this time, confine myself to the propriety and impropriety of feeding wheat down with sheep in the spring; a practice which has by many been hitherto but little understood.

This practice, when *prudently* adopted, is replete with many and great advantages; but if *indiscriminately* adopted, nothing would sooner ruin a farmer.

The advantages to be derived from it are, that it affords feed for your wethers and ewes after the turneps are consumed, and before the spring feed comes in; it causes the wheat to tiller and branch more than it would otherwise have done, and of course produce a larger and better crop; it brings, by the rich manure it affords the land, the crop forwarder, and makes it heavier in the scale, as well as plumper in the bushel.

The disadvantages attending this practice are, that, in certain circumstances, it checks the growth of the corn, and makes the second shoot diminutive and small; of course the ears are lean and poor, and the crop in proportion. It gives the weeds an opportunity of getting a-head, and ruining the crop, to the farmer's great loss and disappointment.

I shall, to be better understood, relate some cases which happened to myself, as I find them noted in my journal, for I always kept one.

In the year 1742, I had ten acres of wheat, which, after Christmas, seemed proud. The soil was a loose loam, and I had, when I fallowed, laid on plenty of dung.

I turned into this field a parcel of sheep on the twenty-second of January, in order to feed it down, which they did;

tion he requires, respecting the disorders of cattle, the culture of rye, and of the naked oat of Cornwall, which will, we imagine, be agreeable to many others of our readers, as well as Mr. Mitchell, whom we thank for this favour. O. N.

did; but the weather coming in milder than I expected, the weeds, which had been brought in with the dung, got such a head, that I was above twenty pounds loser by feeding it.

In 1744, I fed, very indiscretely indeed, another piece of wheat of fifteen acres. The land was poor, and had not been well dressed, so that about the tenth of March the wheat-plants stood very thin. I turned in some sheep, thinking it would afterwards branch more, and produce a better crop; but I was disappointed, for the sheep bit off the knot of the plant, and I had, I think, the worst crop I ever reaped.

The next year, 1745, I had another thin crop of wheat on much the same land as the last: I turned in some sheep the sixth of February, before the knot was above the ground within reach, and it succeeded; for, as I gave it a good top-dressing within a fortnight, it tillered and branched so well, as to produce a much better crop than I expected.

I could relate to you many other circumstances of this nature, but it would take up too much room; I shall therefore proceed to make some observations on my general experience in this matter.

I find wheat should never have any sheep turned on it, unless it is forward in January, and likely to be lodged at harvest, except now and then, with great precaution, when you want to thicken a crop.

Such wheat only should be fed down as was early sown; and I hold it a bad practice if the land is rich with dung.

Wheat should not be fed down, unless the land is pretty clear of weeds, and has strength and substance enough to afford the wheat nourishment in plenty, that it may get into ear at the proper season, notwithstanding the growth was so checked.

There is in every plant of wheat a certain knot, or *crown of the root* as I call it, from which all the branches issue: now, if this crown is nipped off by the sheep, a dwindled production is the certain consequence; for this reason, sheep should never, (unless it is in a very back-



ward season, and then it will not be prudent to feed wheat down at all;) I say, sheep should never be turned on it after the middle of February: the best time, in general, is the latter end of January, or even the middle of that month.

If seasonable rains follow, provided the ground is clear of weeds, it will be greatly to the advantage of the farmer.

If the farmer has the least doubt of the strength of his land towards giving the checked plant nourishment, I would by all means have him afford his wheat a top-dressing of soot, ashes, malt-dust, or whatever other proper manure he may have at hand, provided he is sure it is quite clear of weeds.

Let not the industrious farmer be at all uneasy if, after feeding down his wheat, he perceives the plants stand at a distance one from the other; for if he has practised this piece of husbandry, with the precautions above noted, he may depend upon it, that every plant will throw out a number of branches, and that he will have a field full of stalks at harvest, and a crop that will surprise him.

I am very fond of recommending wheat crops to the farmers attention, not only because it is the most noble of grains, but also because, if well managed, it is the most profitable.

We must not always judge of the farmer's profits by the produce of his land; which some of your readers may think odd; but I will make it appear by an example from my own practice.

In the year 1743, I had two fields, of twenty acres each, in wheat; one of which yielded me, at harvest, at the rate of four quarters an acre throughout; the other yielded me only twenty bushels, one acre with another; yet I got more by the last than the first. The case was thus: falling short of dung, I was obliged to buy; but it was so dear, that I only bought enough for the first field, giving the other two ploughings extraordinary, instead of manuring it; and these ploughings I reckon at a mere trifle, as my horses would otherwise have stood still.

The

The rotten dung cost me fifty pounds ; so that, on casting up my expences of all kinds, I find I should have been at least ten pounds the better if I had given the other field two more ploughings, instead of buying any dung at all. Thus it is evident we must not always judge of our profits by the sum we receive ; for it is also sometimes necessary to take a retrospective view of our expences ; and this, in fact, is the reason why gentlemen seldom get any thing by farming, their expences being larger than ours, though they have, generally speaking, better crops. We farmers must see with our own eyes, or starve.

I am, GENTLEMEN,

Norwich,

Your humble servant,

September 1, 1764.

ONCE A FARMER.

## NUMBER XXXV.

*A Letter from Mr. Lamb, on the best Method of cultivating Black Oats, and recommending more frequent Ploughings than are usually afforded them.*

GENTLEMEN,

**H**AVING been for many years a practical farmer in the eastern part of the county of Essex, you will not, I hope, think me impertinent in troubling you on the culture of black oats, which I have very often to great advantage sown.

Most of my neighbours prefer the white Poland oat, which may, I own, in some circumstances of soil and situation, be best. I prefer the black oats because they are hardiest, for which reason they suit best with my convenience ; for, as a considerable tract of the farm I occupy is light land, I am under a sort of necessity of sowing this soil early, or, if a dry summer followed, I should have no return at harvest.

Few people allow more than one ploughing for a crop of oats ; but such as follow this practice are very wrong-headed ; for they may assure themselves, that no crop pays better for ploughing than oats ; and it is on this account



that I generally give my land designed for oats three tilths; whence I am morally certain arises the largeness of my crops, for I have seldom under five, oftener six, and very frequently seven quarters from an acre, throughout a field.

Your readers will not be surprised at my having such good crops, when I observe, that I almost every year sow some oats on a fallow that has been well dunged; and this I aver to be good husbandry, as it abates the rankness of the soil, kills many of the weeds, and prepares the land in an excellent manner for a succeeding crop of sweet wheat; but I must observe, that I always clear my land of the stiff oat-stubble before I attempt to plough for the wheat.

I have already said that I sow black oats early on my light land: by early, I mean as early as the first week in February, by which time I have generally an opportunity of getting the land in proper order, for a light soil is soon wet, soon dry.

Let me mention once more to your readers, that it is on a light soil, which is apt to burn a crop, that I sow my black oats so early as the beginning of February; for should any of them attempt to sow them so early in a moist, cold, stiff soil, and a hard frost should follow, the young blade would, in all probability, be killed.

I must also remark, that when I sow oats thus early, it is generally under furrow; yet I sometimes sow them broadcast, and plough them in.

The quantity of seed I, for the most part, use, is about three bushels, which I find to be enough; nay, I have sometimes from only two bushels had a good crop; but then I have been particularly careful and attentive to the goodness of the seed, without which precaution I should not, unless the season had been very favourable indeed, have succeeded.

I have found it a very good way to sow first half my quantity of seed under furrow, and afterwards, sowing the remainder broadcast, harrow it in; and this is often my practice when I sow the latter end of February, or the beginning of March.

When I sow oats after wheat, which however is not very frequently, I turn up the stubble as soon as I conveniently

veniently can after harvest, and leave it rough through the winter. The first fine weather after Christmas, I lay it down smooth with the harrows, and immediately give it a cross ploughing.

As soon as February comes in, if it is not a hard frost, I make the land as fine as I possibly can by the harrows, raising a fine loose mould to the surface, which is to be the bed for the oats to lie in; for I sow my oats directly under furrow; after which I pass a moderate-sized roller over the field, and then give it a slight scratch with a pair of light harrows.

This husbandry generally produces me a crop I have no reason to complain of.

My chief reason for troubling you with this letter is, to endeavour to persuade my brother farmers that they do not, in general, allow their oats a sufficient number of ploughings, one being the stated quantity.

If they would plough twice for this crop, they would receive more than twenty shillings an acre for their trouble; but if they would consult their own interests, and allow three ploughings, it would often make fifty pounds difference to them in a field of twenty acres: this they will, perhaps, think wonderful; but it is no less true.

The black oats require particularly to be sown early, especially if the farmer wishes to have them of a fine glossy ebony colour, and that the crop should corn well; for if they are sown late, and wet weather follows soon after sowing, they will be apt to run all to straw; and if dry weather, and the soil is gravelly, it is a chance but they are burnt up.

I have found by experience, that black oats will yield a very large crop after turneps; and this I believe is simply owing to their being sown in a fine tilth; for the mould cannot but be reduced to very small particles if a crop of turneps has been well husbanded, especially if it is in a light soil.

I am, GENTLEMEN,

East of Chelmsford, Essex,

Your constant reader,

August 27, 1764.

J. LAMB.



## NUMBER XXXVI.

*Soot recommended as a Manure for Clover.*

GENTLEMEN,

I Do not remember that much has been said in your collection on the subject of clover: permit me, in some measure, to make amends for this seeming deficiency in your correspondents.

I have not much time to spare at present, therefore shall only mention that I have, by experience, found coal-ashes and soot a most excellent manure for clover, as it secures this crop from drought, and brings it greatly forward.

I generally sow on my second year's crop of clover as much soot as will cover the land very thinly over, which is about fifteen bushels; and this I do in the month of February, soon after which the spring rains wash it into the ground, and the plant thrives amazingly.

The same may be said of coal-ashes, which I lay on thicker, to the quantity of, at least, forty bushels on an acre; from which I find a great advantage.

The farmer who attempts to sow soot over his clover, must take care to do it very thin and regular; for if it falls in lumps, it is ten to one but it gives the hay, made that summer, a bitter, disagreeable taste, very unpalatable to the cattle which eat it.

I have often found it useful, on my stiffer loam, to sow with the soot an equal quantity of sand, which helps to spread it regularly; and on light land I often mix it with an equal quantity of flaked lime, both which have a very good effect. I may, perhaps, trouble you again on another occasion; till which time I beg leave to subscribe myself,

GENTLEMEN,

Your very humble servant,

Hertfordshire,

A. B.

September 6, 1764.

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# Museum Rusticum, &c.

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For OCTOBER, 1764.

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VOLUME the THIRD.

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NUMBER XXXVII.

*Mr. Tull vindicated in his Practice of the New Husbandry ;  
with some Account of his Experiments, and last-published  
Works.*

GENTLEMEN,

**B**EING of opinion that the *general* practice of the new husbandry would be productive of many and great advantages to the public, I am desirous that ill-grounded prejudices against it should be removed. Among these, a prevailing one is, that Mr. Tull pursued his scheme of raising successive crops of wheat upon the same land so long, that, at last, he had much worse crops than his neighbours ; which discouraged people from attempting his method of husbandry.

Mr. Miller, in his *Gardeners Dictionary*, under the articles *Hoeing* and *Triticum*, takes notice of this as an established fact, and supposes it contrary to reason and experience that repeated crops of wheat can be raised annually upon the same land, without manure.



Your correspondent, in the letter, Vol. I. No. LXIII. page 270, also says, that “ Things may be carried too far; and this was the case with Mr. Tull, when, spinning out his principles to too great a degree of nicety, he sowed wheat so long on the same land, without any assistance of manure, that he, at last, had scarcely any crops at all.”

It is certain, that many strange reports were raised of Mr. Tull, and his husbandry, by prejudiced persons; and his book being printed for the author, some booksellers were much offended, and employed several hands to write against him, which they did in a most scurrilous manner, asserting many things that were false, and misrepresenting others. Some of these he takes notice of himself, in the additional parts of his work. I shall mention only one instance how ready people were to give credit to such false reports, page 268. “ Last summer,” says he, “ the vulgar in general believed, in a country but twelve miles distant from me, that I always carried my dung and threw it into a river: now there is no river nearer to the barton where my dung is made, than is the farthest part of my land; so that the expence of losing my dung would be greater than spreading it on any part of my farm. Besides, I live in a country where farmers buy dung at a good price; but it is known that I neither sell nor waste any dung. Against such lying tongues there is no defence.”

But a principal cause, that the reports of his bad success in his wheat crops have gained so much credit, I believe, is, that the Additions to his Essay are out of print, and not generally known; and it is chiefly with a view to inform your readers of them that I write this letter.

Mr. Tull began his scheme of successive wheat crops with four rows. Afterwards he found that three rows were better, and was in that practice, of drilling three rows upon a ridge, when he published his Essay. Upon further experience he found, that two rows produced as good crops as three or four, and were more easily managed.

managed. This he recommends as his last and best method; and altered his drill-plough to his practice of planting only two rows upon a ridge, of which he gives a cut and description in his Addenda and Conclusion. By this alteration, his drill is much less complicated, and less difficult to manage, than that for planting three rows, described in his Essay.

The gentlemen abroad, who are now promoting the new husbandry, have gone into the practice of planting three rows upon every ridge, supposing that to be the best method; and the drill-ploughs invented by M. Du Hamel, and M. De Chateauvieux, are constructed to sow three rows. Mr. Mills also, the editor of M. Du Hamel's Husbandry, tells us, that he declined giving a description of Mr. Tull's drill, because it was so complex, which, indeed, it was for sowing three rows; but, as it is now altered, is not so complicated as M. De Chateauvieux's drill; and is easily made a more general instrument for sowing upon ridges, or upon the level; and has this advantage beyond any of the foreign drills that I have seen, that the two wheels, which serve to turn the spindle, and deliver the seed, do, at the same time, mark the exact distances of the next rows to be drilled, upon level ground; so that a field, of any extent, may be planted with it, at the distances intended, with great exactness.

From the practice of the gentlemen abroad, and other instances that might be given at home, it is evident, that they have not seen the additions that Mr. Tull made to his Essay, in which, besides his different method of drilling, there are several very material improvements in the manner of hoeing and cultivating wheat, and other crops; and from these last parts of his work may be also seen, that the reports of his bad success, in repeated wheat crops, are without any just foundation.

In order to shew this more clearly, it may be proper to premise a short chronology of the progress of his husbandry, collected from his own account of it; in which it is to be observed, that as the year, at that time, was by some reckoned to commence the first of January, and



by others the twenty-fifth of March, and the crops at other periods, it occasions an uncertainty of sometimes a year in this account.

Mr. Tull began his horse-hoeing husbandry about

	the year	—	—	—	1723
	his successive horse-hoed wheat crops				1726
He published his Specimen		—	—	—	1731
his Essay		—	—	—	1733
his Supplement to the Essay				—	1735
his Addenda		—	—	1737 or	1738
His Conclusion is dated March 31,		—	—	—	1739
(All these are printed in small folio)					

He died about the year 1741.

As to his practice of raising successive crops of wheat, he made the experiment first upon part of a field, which had not been dunged for some time, and upon this part he continued to raise wheat for twelve years, without the assistance of any manure. In the Preface to his Essay he says, “The particular scheme of raising annual crops of wheat, without dung or fallow, is as yet only upon probation; but, by the *six crops* I have had in that manner, I see nothing against their being continued.” In the Supplement, page 249, he tells us, “There is now the *eleventh crop* of wheat on the same field, (except that in the ninth year, by accident, of having contracted to let my farm, it was drilled with white oats) and I do not yet see any reason against its being continued for wheat annually, as long as it is kept in this culture.” In the Addenda, page 261, “The field, which last year had the *eleventh crop* of wheat,” (as in page 249) “has now the *twelfth* on it, very likely to be a good one.” And in the Conclusion he says, that the *twelfth crop* of wheat, upon this field, “was the best, I believe, that ever grew on it.”—“It has now the *thirteenth crop*, likely to be very good, though the land was not ploughed crossways;” which he mentions it was the year before, in order to alter the size of the ridges.

I have

I have here collected what he says of this field in particular, as it was his field of experiment, upon which he had raised the most crops of wheat, without any manure. Let us next see what crops he had upon his lands in general.

He begins his Addenda with acquainting the reader, that he was desired to take an exact account of the crop of an acre of horse-hoed wheat, part of a field of twenty-five acres, in order to see the difference between that and the crop of a small piece of ground, drilled upon the level, and hand-hoed. This acre being measured, and the crop reaped, and threshed by itself, yielded twenty-nine bushels and three pecks of clean wheat, nine-gallon measure. But he observes that great waste was made by the reapers of this acre, and some damage was done to the corn by cattle; for which allowance being made, he reckons the real produce of this acre to have been thirty-two bushels, or four quarters, of wheat.

He then proceeds to give an account of the crops of wheat upon his other fields, which, including the above-mentioned field, were in all one hundred and six acres. The corn was not threshed when he wrote this; but it appears, by his account of the crop, as I have computed it, that these one hundred and six acres produced, upon an average, nearly twenty bushels of wheat *per* acre.

If the quality of this land is considered, none of it rich, and the greater part light, and of a thin staple, this cannot be called a bad crop. But there was another very important circumstance, which ought to be considered: Mr. Tull was now advanced in years, and in a very bad state of health; was frequently confined to his room, and sometimes to his bed; infomuch that, as he tells us, he had not seen some of his crops from the time they were sown till the spring following. And in his Supplement he says, page 225, “ My agriculture having been carried  
“ on by common day-labourers, without any body to in-  
“ spect them, (except when my diseases suffered me to  
“ attend them, which, for several years last past, has  
“ been very seldom) cannot be expected to be all well  
“ managed;



“ managed ; for though they can do it well when they  
 “ please, yet their will being above controul, I must  
 “ be content with their doing some tolerably well every  
 “ year.”

*The dust of the master's feet* is a kind of manure so necessary in every scheme of husbandry, that no person of experience in such matters, who reflects upon these circumstances, would have reason to be much surpris'd, if Mr. Tull's crops had really fail'd as much as has been suppos'd ; and if we also take into the account, that these day-labourers whom he employ'd, and who had the management of his agriculture at the critical seasons, were then generally, as such men still are, prejudic'd against the new husbandry, I think his success, notwithstanding these disadvantages, is a strong argument in favour of this husbandry.

But let us proceed to what Mr. Tull says further of these successive wheat crops. In the Addenda, page 263, he tells us, “ I have now six score acres of wheat, an  
 “ hundred acres of which are on the stubble of the last  
 “ years wheat crop.”

And in the Conclusion, page 273, “ The crop of the  
 “ six score acres of wheat, that was growing at the time  
 “ of publishing my Addenda, was much greater than the  
 “ crop the year before it, and would have produced more  
 “ grain in proportion, if the heavens had been as propitious ; but the heavy rains that fell when the first-  
 “ planted was most in blossom, diminished the filling of  
 “ the ear and its grain, yet not so much as of most sown  
 “ wheat, especially of the early-sown, which generally  
 “ escapes the best in this common calamity. The burn-  
 “ beaked wheat, being always early sown, I am inform'd  
 “ had next to no grain in it ; and this is the most ex-  
 “ pensive sort of husbandry, the tenants pay such exor-  
 “ bitant fines for the liberty of ploughing this land.”

Again, page 274, “ The same six score acres that was  
 “ wheat the last year, is planted with wheat now, and is  
 “ all of it as strong and likely for a good crop as in any of  
 “ the former years, though there is but about one acre of

“ it

“ it dunged. The whole is the freest from weeds before  
“ hoeing that ever was seen, and the sown wheat in the  
“ neighbourhood the fullest of them.”

“ I can shew, at this instant, one of the experiments I  
“ have recommended, which, though it be on less than  
“ two perch of ground, must convince every man who  
“ sees it (and doth not renounce the evidence of his  
“ reason and senses) that pulveration by instruments can  
“ vastly exceed the benefit of common manure.

“ ’Tis to such experiments that I leave the progress of  
“ my horse-hoeing husbandry, assuring the public, that  
“ in all my practice, which is now *thirteen years*, I never  
“ have met with one instance that gives me the least sus-  
“ picion of the truth of the principles I have advanced;  
“ and that, I believe, they have nothing to fear from  
“ enemies, but the false relation of facts, or fallacious  
“ arguments.”

Mr. Tull mentions here, that he intended this to be his last crop. He lived about two years afterwards. Whether he continued to occupy his farm, I am not certain; but if he did, and his crops were worse than the preceding years, that could not be justly attributed to any error in the principles, but to the other causes above mentioned. We see here that he appeals to an experience of *thirteen years*: nor can it be supposed, or admitted, that a person of Mr. Tull’s understanding would go on from year to year to enlarge his plantations of wheat to the extent of one hundred and twenty acres, had he not been fully sensible of the advantage of so doing.

The repetition of wheat crops upon the same land may, by many persons, be supposed rather a matter of curiosity than of any great use; a change of crops being the general custom, and supposed to be the most profitable: but this is not so clear as some imagine. The custom is founded upon the supposition that change of crops is necessary; which, though it may be true in the old husbandry, is not so in the new; and, without doubt, the change is often hurtful to the farmer; for, not to insist on the extraordinary labour necessary to prepare the land, and the loss of the season,



season, if it cannot be got into proper order in time, or, which is as bad, sowing it, though not in proper tilth to receive the seed, the main point of all is, whether the profit of these several different crops is really more than hoed successive crops of wheat, or other corn commonly propagated? In answer to this, I believe it is not very difficult to shew, by a fair comparison of both, that the hoed crops are the most profitable, even including the clover and turneps in the old husbandry. Nor is a profitable change of the crop, or the advantage of obtaining sometimes three crops in two years, peculiar to the old husbandry; for the same may be had to greater advantage in the way of hoeing.

There is another circumstance in the old husbandry very unfavourable to the farmer. As he is under a necessity of changing his crops, he cannot adapt them to the soil. Most farms have land in them of very different qualities, and these are not equally proper for the production of plants of every kind. The strong land, that is very fit for beans, wheat, and clover, is not equally so for peas, barley, and turneps. But the farmers commonly vary their crops according to the custom of the country, and the consequence is, that most of their lands are planted in their turn with crops not the most suitable to them; which is an inconveniency that may be avoided in the new husbandry.

Having pointed out the additional parts of Mr. Tull's work, it is hoped that we shall soon have a new impression of the whole: and as I cannot, by any means, approve of an abridgement, permit me to recommend the method of printing it, which I apprehend will be the easiest and most agreeable to the readers. It consists at present of so many parts, that it is very troublesome to turn to each of them, in every different point of theory or practice that is touched upon in the Essay; and yet this is necessary to be done, in order to see the whole progress of the experiments, and the alterations, or improvements, made by the author.

To remove this difficulty, I would propose a new impression in folio; that the notes in the essay should be inserted in the text (where they properly come in) *verbatim*, and without any alteration; that the Supplement, Addenda, and Conclusion, be printed at the bottom of each page to which they belong, by way of notes, distinguishing each by proper marks, or a different character. In this way the whole of the author's sentiments upon each point will be laid before the reader in one view.

The description given by Mr. Tull of his drill-plough is obscure, and much too long; and it is to be wished that some practical driller would alter that part. And I am of opinion, that his hoe-plough might be wholly omitted, without injury to the work; being satisfied, from experience, that the common Middlesex swing-plough, or the Rotheran-plough (both which have an iron copse, or bridle, at the end of the beam) will perform the operation of horse-hoeing between the rows of corn, or other plants; and will be more agreeable to the ploughman, because he is accustomed to use them.

Whether the profit of a new impression of the whole would answer the expence, I must leave to the consideration of those who are the best judges of it. If they do not think it adviseable to give one good edition of the whole, I hope they will find their account in reprinting the additional parts. To suffer them to be lost, or forgotten, would be a real injury to the public, and to every lover of agriculture in particular, whether he is, or is not, a driller and hoer; for I may venture to affirm, that there is not one author of any note, that I have seen, who has written upon agriculture since Mr. Tull published his Specimen and Essay, but who has, in part or in whole, adopted his theory, or borrowed from him some of the most material of the modern improvements.

As it may be some time before the last parts of his work are re-published, I shall, for the benefit of such of your readers as incline to practise the new husbandry, take notice of one or two important alterations in the horse-hoeing culture.



In the Essay, Mr. Tull directs, that the hoe-plough should be brought as near as possible to the rows at first, and when the plants are young; but that the subsequent hoeings should be at some distance from the rows, lest the plough should tear off too many of the roots, and destroy the plants; also that the last hoeing should throw the earth of the intervals up to the plants, which he thought necessary for their better nourishment, when they were grown large. His last practice was different in both these respects.

For in the Conclusion, page 272, he says, “ At the  
 “ second hoeing, the plough goes in the furrow of the  
 “ first, making it deeper and nearer to the wheat: the  
 “ third hoeing fills up this furrow; and then, at the  
 “ fourth hoeing, the plough goes *in the same place as the*  
 “ *second*, turning the mould into the intervals. ’Tis re-  
 “ markable, that though the furrows of the second and  
 “ fourth hoeings be *deep and near to the rows*, seeming to  
 “ deprive the wheat of the mould which should nourish it,  
 “ whereby one would imagine, that these furrows, lying  
 “ long open, should weaken or starve it; but it is just  
 “ the contrary, for it grows the more vigorous: and it is  
 “ the observation of my ploughmen, that they cannot,  
 “ at these hoeings, *go too near to the rows*, unless the plough  
 “ should tear out the plants.”

“ If I may presume to assign the cause of this sur-  
 “ prising effect, it is in my opinion the following, *viz.*  
 “ this open furrow has a *double surface* of earth, which,  
 “ by the nitre of the contiguous atmosphere, is pulverized  
 “ to a great degree of minuteness near the row. The  
 “ roots that the plough cuts off on the perpendicular  
 “ side of the furrow, send out new fibres to receive the  
 “ pabulum from this new-made pasture; and also part of  
 “ this superfine powder is continually falling down into  
 “ the bottom of the furrow, and there gives a very quick  
 “ growth to those roots that are next it, and a quick pas-  
 “ sage through it into the earth of the interval, where  
 “ they take likewise the benefit of the other side of this  
 “ pulverized furrow. When it is said that air kills roots,  
 “ it

“ it must not be understood that it kills a plant, unless  
“ all, or almost all, its root is exposed to it, as it is not  
“ in this case. Some think there are roots that run  
“ horizontally below the plough into the interval; but of  
“ this I am not convinced.”

“ ’Tis not often that we plough above *four times*, and  
“ then the furrow is turned towards the row at the third  
“ time only.”

“ Whether these furrows lying long open next the  
“ rows, in very hot dry climates, may be prejudicial,  
“ cannot be known but by trials.”

The practical hoer will find this method of going close to the rows of wheat, and other plants, of great service to him; not only in the vigour of his plants, but also in the more perfect tillage of his land, and a considerable saving in hand-hoeing, weeding, and manure.

The other circumstance, of a large plant growing more vigorous, and the seed filling better, by ploughing the earth away from one side of it, is so singular, and opposite to the common practice of gardeners, that should it succeed generally, it may lead to something new in the theory of vegetation.

I cannot conclude without taking notice of a very curious and valuable performance, just published, entitled, *Essays on Husbandry*. The author is a practical cultivator of many plants and grasses, particularly lucern, in the way of transplanting and horse-hoeing. He is an advocate for the new husbandry in cultivating many sorts of vegetables, but disapproves of it for corn, of which he does not seem to have had experience himself. His two chief objections are, that he is not satisfied that the profit of raising corn is greater in the new husbandry than in the old; and that the new culture is too nice and difficult for common farmers. The last objection will be readily admitted to have great weight; but it will conclude, almost equally, against the new culture of other plants, which he strongly recommends: but if gentlemen will set the example, and give proper encouragement to the farmers, time and perseverance will overcome many difficulties;



but 'till the farmers are convinced, that the new husbandry will be the most profitable to them, it is not to be supposed, nor is it reasonable to expect, that they will ever attempt it; and therefore it is greatly to be wished, that such of your readers, as are furnished with experiments and observations of the new husbandry, would communicate them to the public; and particularly that your ingenious correspondent in Ireland, who has testified his approbation of it by his letters, and his extensive practice of it in the fields, would oblige your readers with a particular account of his expences, and produce, *per* English acre, of his lands cultivated in this manner, especially of his wheat crops; together with the usual expence and produce of the common wheat crops in Ireland, in his neighbourhood\*.

As I have some grounds to believe, that the horse-hoeing of wheat (and the new husbandry, in a larger sense, for barley and other corn) is superior, in several respects, to the common husbandry, and also more profitable, I shall be glad to see a fair state of the whole, on both sides; to which if I can, in any degree, contribute, it will be very agreeable to †,

GENTLEMEN,

Middlesex,  
September 22, 1764.

Your very humble servant,  
E. S.

## N U M B E R   XXXVIII.

*The New Husbandry recommended by a Practiser of it in Ireland.*

GENTLEMEN,

I Am perfectly satisfied of the superior excellence of the horse-hoeing husbandry, founded upon the experience and practice of it; but I must own, that if every man, who may undertake it, shall have the difficulties I have met

\* We heartily join with this correspondent in requesting the above-mentioned gentlemen to favour us with an account of his experiments in the new husbandry. E.

† This correspondent's letters will always meet with a very favourable reception. E.

met with, it can never become a general practice; but those which have opposed me, have arisen chiefly from a failure in my instruments, and an impudent dictativeness incident to almost all workmen. However, by repeated and expensive attempts, I have now, I believe, the simplest and completest apparatus any man ever had, of which you will allow we may judge from the books; and some of my workmen are now pretty expert, even so much, that I can leave the whole management of any field to their care, though my presence is necessary to gain expedition\*.

My drill is rather of a new construction, (after having made many) but some detached pieces of it are taken from the French books: it sows regularly, breaks no corn, and sows all the different grains.

My hoe-plough is almost of a new construction; it is very light, and yet powerful: with it I hoe two Irish acres a-day.

The other instruments are also complete; but the two first, with the drill harrows, are those *capitally necessary*†.

I have been very unfortunate in my wheat this year, which suffered immoderately by the rains and floods of last winter, and, to complete its destruction, was cut off, last May, by a little insect called the red-worm, which you will find in Mills's *Du Hamel*, page 90, 91; and also in *Stillingfleet's Miscellaneous Tracts*, in note page 175, second

\* Our kind correspondent will, we hope, pardon our permitting the public to participate in the pleasure his letter gave us: he may depend on it his name shall not, till he assents to it, be known to any but ourselves. As we are not acquainted with any gentleman who has so largely practised the horse-hoeing husbandry as our correspondent, we hoped that the facts contained in his letter would serve to excite an emulation laudable and profitable to the nation. E. R.

† We should esteem ourselves greatly obliged to this gentleman if he would send us either models or drawings of his drill and hoe plough, that we might, through the channel of our work, communicate the knowledge of such useful instruments to every part of his majesty's dominions. This would, we flatter ourselves, induce many to make experiments in the new husbandry, who are now discouraged from doing it by the apprehension of difficulties, in part, at least, imaginary. E. R.



second edition; which I take to be the same insect, though he does not describe it as such: but I shall shortly procure a friend of mine, who is intimate with him, to trouble him on this subject. However, I have some wheat which escaped all these misfortunes, and was the other day exceeding fine indeed, appearing to cover all the ground, and the ears from five to six inches, and upwards, long: but the immoderate winds, and almost incessant rain we have had, and which is now falling in an alarming quantity, has lodged it, and threatens all our crops with danger.

My barley in drills is extraordinary fine, and is yet erect; my turneps are fine, and my cabbages surprising.

Some gentlemen of my acquaintance, who have been at Mr. Rocque's, say my lucern and burnet are superior to his. I have again sown a little lucern in broad-cast, and at the same time sowed in drills: the former grows pretty well, but is in no proportion equal to the drill in quality or colour, though they say even the broad-cast is superior to his: but rely upon it, the method will not do for a lasting crop. I understand he renews his every third year: that is the very time in which the drilled lucern begins to afford large crops, and will continue so to do.

I had almost forgot to inform you, I have this year, for the first time, sown oats in drills, and they have succeeded to admiration\*.

I have also this year collected a small assortment of our best grass-seeds, which I intend to cultivate in drills, in order to have the respective seeds pure; by which I flatter myself with the hope of obtaining choice seed in quantity, for laying down meadows in what I call proper order.

I am attempting to save lucern seed, but I fear the climate will not do, and the season conspires against me; but I shall pursue it till I have the advantage of a good one.

In

\* We must beg leave once more to request this sensible and experienced correspondent to send us an account of his success in the culture of the various kinds of grain, &c. in the new husbandry, and particularly that he will relate the manner, &c. in which he sows his oats. L.

In further support of the drill husbandry, I am to inform you, that mine is very poor land; and yet, by force of tillage, I raise good crops of wheat and barley, in the drill way, without manure; not but I would use it at first, could I get it: but for my turneps and cabbages \* I manure highly, though I expect not to repeat that on the same ground so long as I keep it under the hoe-plough.

I am, GENTLEMEN,

Ireland, Your most obedient humble servant,

August 15, 1764.

AN ENGLISHMAN

## N U M B E R XXXIX.

*Some probable Reasons assigned for the Effects of Coal-Cinders when eaten by Pigs.*

GENTLEMEN,

**I**N your *Museum Rusticum*, Vol. II. page 11, I find, “ A letter respecting an odd circumstance happening “ to some pigs put up to fatten.” In page 13, you express a desire, “ that some correspondent will give his “ opinion of the physical reasons for the cinders having “ the described effect on the pigs.”

I have expected to see your request complied with, by some person more capable than myself, in your succeeding papers: that not having been done, I devote half an hour to that purpose, with this injunction upon you, if any letter should come to your hands on this subject, more to the purpose and credit of your work than mine, that you lay this aside, and give that a place which may more profitably to your readers occupy the paper mine might take up.

Pigs

\* We should be glad to be informed what proportion the crop of cabbages raised by our correspondent bore to those raised by Mr. Randall in his Semi-Virgilian method, and also the comparative expence of the culture each way, that the judicious farmer may adopt one or the other, as best suits his convenience. E.



Pigs are an animal which, of all the domestic ones, seem to us the foulest feeders; and from their wallowing in mud and dirt of every kind, they appear to be filthy and dirty in their nature: but these disagreeable and forbidding qualities I conceive to arise from a want of due care in the breeders and feeders of this most profitable and useful creature. Their appearing to be foul feeders arises from an order in nature, which renders them valuable.

From the necessity there is of their being fat for man's use, they are endowed with a most voracious appetite: when that is to be satisfied, they will eat almost any thing that comes in their way.

Nuts of all kinds they *eat most greedily*, that being the provision provided by nature for them, with almost all kinds of grass, as they are an animal of the wild species.

When we add to this, that from their eating almost any thing, we may conclude they have little or no choice in point of taste, so long as their stomachs call for food; hence I think we may abate our surprise at their eating any thing that shall crack or break between their teeth, like any of the kernel productions of nature in the vegetable kingdom.

This seems to account for their eating the cinders.

When they become fleshy from a plenty of fattening food, they appear, it is true, to be more delicate. I do not apprehend that arises from their having any nicety in their palates, but from a loaded and pampered stomach, naturally rejecting some things in preference to others, particularly such as shall at all resemble those which nature seems to have immediately adapted for the respective animals.

Thus it is with human nature: hunger sinks upon us not only that taste we boast of in distinguishing the qualities of food, but even dissipates that prejudice which the sight and smell give the stomach of a highly-fed person against offensive appearances attending food of different kinds, whether they arise from bad dressing, putrefaction, or otherwise.

As to their being dirty and filthy, I own myself of another opinion, for, on the contrary, they are rather cleanly. If a pig has a proper dwelling, in which should be a yard and sleeping-place, he will never dirty the latter, but keep it always clean and dry, provided it is properly built.

They are naturally animals of great heat from their high feeding; consequently they seek for places to cool themselves, and therefore lie in ditches, mud, and dirt: but I have observed, that where they can get at water, they will lie in that, in preference to mud; and where they can get clean, instead of dirty water, they always prefer the former, unless where a master hog deters a weaker from approaching the cleaner place. This seems to prove they are not such dirty creatures as they are generally reputed to be.

Your correspondent, page 14, says, “ I found the  
“ cinders and barley meal mixed in their stomachs when  
“ they were killed; and in the small intestines the case  
“ was the same, except that the barley meal had received  
“ the natural alteration, but the cinders were in the same  
“ state they were swallowed by the animals.”

This, I must own, seems to be strong; and, I am persuaded, the gentleman was careful in his observations: but notwithstanding the *appearance* of digestion seems to have been completely effected upon the barley meal, yet it certainly must have been otherwise, as I conceive, for these reasons.

The cinders, from their great number of points, must have caused a friction upon the internal coats of the stomach, which, more or less, must have irritated the parts to some degree of inflammation, however fair and perfect they may have appeared after killing.

This inflammation must have abated in appearance by the loss of blood which occasioned the death of the pigs; for every anatomist knows, that parts of animals, particularly the internal ones, receive a manifest change in appearance by death.



I may, I hope, without offence to your correspondent, (for I really mean none) say, that it would require a very nice and accurate observer in anatomy to discover whether the internal coats of the stomach and intestines had been irritated; the internal parts, and capillary vessels, of the intestines of all animals, being small enough to baffle the inspection of the nicest artist in a case of this kind, had it happened to the human frame.

Therefore I think we may safely conclude, not only that the muscular mechanism of the stomach must have received some check in its operation of digestion, but that the capillary vessels for conveying the nutriment into the animal frame must have been irritated, nay, perhaps, lacerated, and consequently not supplied with that quantity of nourishment which we know the barley meal\* will afford, or that those vessels are capable of conveying: add to this, that the animal, from the same causes, must frequently be in more or less pain, which will, in proportion to the degree of it, ever check and retard feeding, and that more particularly when the intestines are in any degree injured.

Hence I would conclude, that a great quantity of the barley meal passed off undigested; and from that, and the internal injury I have described, I conceive the pigs could not thrive.

But I wish your correspondent had killed only two of his pigs, and kept the other two some time longer with the meal without cinders: we should have known, in proportion to their progress, or at least might have guessed, how far the cinders had operated in the manner I have described my conception to be of their effect.

If you think, gentlemen, my ideas of this matter worthy the perusal of your readers, you will give it a place; otherwise, without ceremony, cast it aside, as in  
either

\* In my letter to you on the culture of bere, I mention barley as being used to feed hogs: I wish bere may be substituted in its room, as I really think it would save barley, and be less expence in feeding hogs.

either case it will not add to, or diminish, my approbation of your undertaking, in which I heartily wish you a set of able correspondents,

And am, GENTLEMEN,  
Ireland, Your very humble servant,  
September 10, 1764. AN ENGLISHMAN.

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## N U M B E R XL.

*Two Questions, relative to Potatoes and Wheat.*

GENTLEMEN,

I Should be glad (being a lover of potatoes) of the editor's request being complied with on the writer's note, in Numb. LXXVIII. Vol. II. because it is very usual in some parts of the kingdom to set pasture-land (intended for tillage, and to be sown directly with wheat, after the potatoes are taken away) to undertakers, who oblige themselves in the preceding spring to lay a great deal of muck on it, which in digging they turn down, then plant the potatoes, and take them up at a time fixed; when the proprietor comes with his plough, finds his ground in good tilth, and sows wheat.

Now, from hence it is very observable, that the proprietor of the land is well satisfied for the use of it the better half of the year, by finding it in such good order at the end of the summer; and the undertaker, by his crop of potatoes, for his muck, expence in digging, trenching, weeding, and harvesting his crop; and therefore I shall be glad to see the writer's proof, "That where the ground requires dung, their propagation is a loss of many pounds an acre to the owner of the land, injurious to the community, and even to the poor."

I think the public would be obliged to A. H. No. XCIII. Vol. II. if he would say *when* he sowed his soaked wheat-seed, which was soon so parched, starved, and burnt up, and *when* what was not soaked, which yielded so good a crop;



as his information of the result of the two ways might *then* be, some season or other, of service to the public.

I am, GENTLEMEN,

Your humble servant,

A. I.

## NUMBER XLI.

*On the pernicious Practice of breeding from blind Stallions.*

GENTLEMEN,

THE piece, marked Numb. LXXIX. in your Second Volume, lies open to several strictures; and I almost suspect that the history of stallions, if fair and candid, is local, there being now no want of good ones in most parts of the kingdom for the saddle; but it requires more judgment, to chuse which is most suitable and proper for the breeding mares, than falls to the share of most people; and in the colts, of even the running kind, I am told there is much chance whether the cross (as the sportsmen call it) will agree or not, though the blood, &c. on both sides, be unexceptionable. But for coach-horses I will point out one caution that will be useful to gentlemen and farmers, who do not breed professedly for sale, *viz.* never to breed out of a horse which has any defects in his eyes, whose progeny, at about five years old, and, if hard worked, before, generally shew their hereditary imperfections.

Most of those who breed for sale, and their *first* chapmen too, know this, and (which at first may seem surprising) make blind stallions, and their colts, their choice.

If the former did not, you would not see such a number of blind stallions led to the several markets, during the season, in Leicestershire, Northamptonshire, Staffordshire, &c. and if the latter did not, they know well enough they should not have so constant a call for cattle of that kind.

The

The truth, in short, is, the breeder sells from two years old to their rising five, working them gently for a year or two; and the dealer, after making them up, and to look well and showy, parts with them about, or before, five, and it is ten to one but before six they are blind, oftener imputed to some ill usage than the real cause, when fresh ones are wanted; which brings speedy custom to the breeder, or dealer, or both: so that I have heard a very sensible member of the house of commons often say, that he thought that an act of parliament to prevent blind stallions being brought to market, would be as advantageous to the community as some others, which promise more, but produce less, good to the public.

I am, GENTLEMEN,

Your humble servant,

A. I.

## NUMBER XLII.

*Method of reducing to a profitable Loam a cold stiff Clay.*

GENTLEMEN,

**A**FTER having had a good school-education, I was by my choice induced to apply myself to the study of divinity; and when I arrived at a proper age, and had taken two degrees, I was ordained, not in the least doubting but that if I led a good moral life, and attended closely to the duties of my function, I should, in due time, meet with some benevolent patron, who would generously make some certain provision for me during the remainder of my days.

Buoyed up with this hope, I contented myself many years with the scanty income arising from a small curacy.

I could by no means reconcile it to my conscience to make any use of natural or accidental interest, where ecclesiastical preferment was in question.

I happened, however, to have a sister who was waiting-maid to a woman of quality, and had she not been more worldly than myself, I should probably 'till this day have been without a living,

My



My sister's importunity with her lady, to which I was till several years afterwards a total stranger, at length procured me a rectory worth near eighty pounds a year, in the hundreds of Essex.

In this place I have ever since resided; for though the air is rather moist, and in general not very wholesome, I have, by great care and temperance, contrived to preserve myself in tolerable good health.

It is a long time since any clergyman has resided on this living: it is therefore natural to think that I found things here in very rough order.

My house was miserably shattered, and out of order, being barely covered by some old thatch: this, however, did not much grieve me, as I knew that a few pounds would put it into tenantable repair.

Being naturally of a contemplative disposition, I am, of course, fond of a garden; but, to my sorrow, I found that the plot near my house, which went by this name, was over-run with a four kind of grass, which seemed to be the only crop it would, in its then state, produce.

On an examination of the soil, I found it to be a wet, cold, compact, deep, and almost-barren clay.

I was at first rather discouraged at the prospect, as I greatly feared I should not be able so to correct the stubbornness of this heavy clay, as to make it a proper soil for a garden: this, however, with the aid of some industry, and not a little perseverance, I have effected; and I now begin, after ten years labour, to reap the fruits which I may be said to have well earned.

I imagine it may not be disagreeable to your readers to be informed in what manner I managed this stubborn soil, so as to reduce it to a good loam.

The first thing I did was to cause the whole land to be trenched two spit deep: my ridges, by this means, lay near two feet and a half high; in this rough manner I let it lie during the whole winter, in order to its being exposed to the various effects of the sun, air, frost, and rain.

In the mean time, I got together, in a convenient part of my yard, a considerable quantity of chalk, rubbish,

bish, and coal-ashes: these were carefully mixed together in a large heap. I procured also a quantity of very rotten horse-dung, and some rubbish, which I got from a neighbouring brick-kiln.

About the middle of February I had all these materials well mixed together, and taking the advantage of a dry time, I had a layer of my compost scattered in the bottom of each trench: to this succeeded a thicker layer of the clay, and so on, alternately, a layer of compost and another of clay, till, when the work was finished, the ridges occupied the spaces in which the trenches were during the winter.

In this manner they lay till April, when I caused the ground to be levelled and sown with oats: my crop was not bad; and I caused the oats to be reaped, that the stubble, which was pretty stiff, might be left as long as possible.

As soon as my oats were housed, I had the stubble turned up by a deep furrow, and let the land lie rather rough than otherwise, upwards of two months.

The weather being then mild, I had the whole again trenched, and the ridges, instead of running, as before, north and south, were now east and west.

It lay in the same manner the second winter as it did in the first; but about the latter end of March I had the whole again levelled, and spread over pretty thick with a compost made of three parts rotten stable-dung, and one part coal-ashes: this was immediately turned in by the plough, and I ventured to sow a few peas on the land, which succeeded rather better than I expected, but were in some few patches burnt by the heat of the coal-ashes, which were not yet thoroughly mixed and incorporated with the clay.

The succeeding autumn, after well digging the ground near a pallisade fence, and breaking and mixing it together, I planted some fruit trees; but I had the caution to let the bottom of their roots, when they were planted, be set no lower than the surface of the ground; and, in order to cover them, I had hillocks raised round each plant.



They succeeded much beyond my expectations; and I have, for several years past, had better fruit than is to be found within many miles of my house.

But, to return to my management of this ground, when the peas were off, I had it first ploughed, and from that time dug, cropped, and ordered, in all respects, like other gardens destined for the production of culinary plants.

I every year manure it; but instead of laying on rotten dung alone, I constantly mix with it coal-ashes; and, if I can by any means procure it, I now and then mix with my compost a few bushels of coal-foot, which I find wonderfully efficacious in reducing the coherent particles of the clay.

I must not forget to mention, that I have two or three times laid on some quantities of malt-kiln dust, which was of great service in helping to form for me the good loam I now possess.

In the third year of my toils, when I thought to enjoy the fruits of my industry, I perceived that lying on a flat, my ground was too damp: this occasioned my having a deep ditch dug round the boundary of my garden, in order to carry off the superfluous moisture, which would, I found, have been otherwise troublesome to me. I now have all the comforts I can wish for in a garden; and if, by means of this communication, any other person shall be enabled to gain either profit or pleasure, I shall think myself abundantly rewarded for any trouble I may have had in writing this account, in order to its being inserted in your useful collection. One moral, at least, may, I think, be deduced from what I have said, which is, that *industry, patience, and perseverance, can overcome mighty difficulties, seemingly almost insurmountable.*

I am, GENTLEMEN,

Your constant reader,

South of Maldon,

And humble servant,

July 9, 1764.

AN ESSEX RECTOR.



NUMBER XLIII.—A Declaration, or briefe Collection, of one Year's Expence for all the ordinarie Dinners and Suppers, with her Majestie (Queen ELIZABETH's) Breakefast, and Breakefast for the Guard, furnished with Bread, Beere, Ale, Gascoigne Wine, and with all Manner of Victuals of Flesh and Fish, rated accordinge the Market Prices, at highest Condition; wherein is sett downe what the Charge of one Messe of everie Diett is in one Flesh Day and one Fish Day, and so 220 Flesh, and 145 Fish Days, and then for 365 Days, being one whole Yeare.

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The somme of all thes diett is 18431l. 13s. over and besides sacke, renish and sweet wins, butter, eges, faussery, frutry, spicery, confexionary, lights, wood, coall, carriages, expences extra curia, supplies and necessarys in ye offices, wages, bordwages, command, and wast, liueris, almes, offerings; and the stable so much as paid by Mr. Cofferer.





## NUMBER XLIV.

*Thetches particularly recommended to the Attention of Farmers, as affording excellent Green Fodder for Cattle, and being, when ploughed in, a good Manure for a succeeding Crop of Wheat.*

GENTLEMEN,

**T**HETCHES are a grain often overlooked by the farmer; yet are they, when *properly cultivated* and *applied to proper uses*, highly valuable and very beneficial.

They are a very hardy grain, and resist the severity of a severe winter better than most other crops; besides which, they have the additional advantage of growing in almost any soil; but then the farmer is to expect a produce in proportion to the goodness of his land.

I would by all means advise, where it is intended for early feed, or to stand for seed, that the small winter thetch be cultivated in preference to every other sort, because it is not only hardier, but also, being sown about Michaelmas, it is forwarder, to serve as fodder, or will be earlier ready to mow for seed, which is no inconsiderable advantage; for the thetch being a succulent plant, and forming a very thick cover on the land where it is a full crop, it will be in danger of rotting instead of drying, if it should be cut late, or the harvest weather should be very rainy; but if the winter thetch is sown early, it will, in general, be fit to mow in July, or the very beginning of August, when there is less danger.

Few farmers allow more than one ploughing for thetches: I always allow two, notwithstanding what the neighbouring farmers tell me of turning the fresh soil again down to the bottom of the furrow: I find my advantage in this practice, and shall therefore continue it.

I have generally experienced the first week in October, if the weather is fine, to be the very best time for sowing



thetches; and I allow only two bushels of good seed to every acre, which I find full sufficient.

I sow them broad-cast on the rough land, as the plough leaves it after the second ploughing, taking care to harrow the field length-ways and cross-ways, in order to cover the seed the better; after which I pass over it a roller, heavier or lighter, according to the nature of soil and the dryness of the weather, observing, that if the weather is dry, and the soil light, I use a heavy roller, in order to close the pores of the light earth; but if the soil is stiff, and the weather damp, I use a lighter roller, lest I should knead and crust the field over, so as to stop the young shoot of the vetch.

This crop will, in general, choke all the weeds that come up with it; but this must, however, be understood of the smaller sorts, for if there are many large rampant weeds, it will be necessary to have them extirpated with the hook.

Thetches afford excellent food for sheep in the spring, make cows give a great deal of good milk, and horses are fonder of them, cut green, than almost any other food.

The best way is to cut them fresh and fresh every morning as they are wanted; and if the farmer has occasion for them for this use only, he may sow in the spring, to great advantage, the large thetch, at different times; by which means he will have a succession of crops, which, to give green to his cattle, he should always cut just before the plant flowers, for it is then in its tenderest and most succulent state, and will afford most nourishment; whereas, if he leaves it till the seeds are nearly ripe, the stalks harden, grow sticky, and are of far less value; besides that many of the lower leaves will, by this time, be withered, or dropped off, and entirely lost.

I must not conclude this letter without mentioning an important use to whichetches are often applied; I mean, a full crop of them is frequently ploughed into the land as manure, to prepare it for a succeeding crop of wheat.

When

When thatches are sown with this intention, I would recommend the large sort, and that four bushels of good seed should be used, to be sown broad-cast twice in a place: but my way of sowing it is somewhat peculiar when I mean to plough it in; therefore I think it may not be amiss to relate it to your readers.

Most farmers sow it by casting it twice in a place, immediately after the land is ploughed, and then harrow and roll the field; but I proceed as follows.

As soon as the field is ploughed, I sow two bushels, broad-cast, on every acre; after which I harrow it lengthways and cross-ways. When this is done, I sow the remaining two bushels, and then harrow it twice again with a pair of heavier harrows, and finally scratch it twice over with light harrows to raise a mould, concluding my work by passing a roller over the whole field. By this management I scarcely ever miss of a full crop, which covers the whole land, chokes the weeds, and serves as excellent manure for the wheat that is to follow.

I have always found that this husbandry succeeded best in light, hungry, sandy, or gravelly loams; and a brother of mine, who lives in Bedfordshire, tells me it does very well on a chalky soil, provided there is any heart in it.

The time I choose to plough in the thatches is just after the blossom fades, and the kid begins to form; and it is really surprising to see what a strong fermentation they raise in the soil.

I have sometimes had my crops so heavy that I have been obliged to mow, or hook up, the thatches before I could plough the land: but this is not often the case; when it is, the farmer has reason to rejoice.

There are, as I hinted in the beginning of this letter, scarcely any soils but the thatch will thrive in, though ever so various in their nature. I am an old man, gentlemen, and in the course of many years experience have sown thatches often on a sandy and gravelly loam, a chalk, though not for ploughing-in, a gravel, a low damp clay, and a perfect brown loam. On all these varieties of soil



have they succeeded with me; but I must note, that the farmer may expect a larger crop from a gravel (I do not mean a pure gravel) that has some heart and strength in it, than from the finest loam, which has been, by a long-continued course of bad culture, starved and impoverished.

The large thetch may be sown in January, February, March, April, or even the beginning of May, when designed for green fodder; but I would, by all means, have the industrious farmer avoid sowing it before Christmas, for it is a tender plant, and if hard frosts ensue, he may chance to lose his crop.

I fear I have taken up too much space by the length of this letter; but I hope you will excuse it. I am a great advocate for the new husbandry; yet am I one of those who think it best to recommend to farmers the amendment of their old practices, before we should attempt to introduce among them new doctrines which they do not understand, and which they will, for some time to come, object to, merely because they are new. Believe me, gentlemen, to be, with great truth,

Your sincere well-wisher,

Surry,

And humble servant,

September 15, 1764.

A FARMING GENTLEMAN.

## NUMBER XLV.

*Common Farmers vindicated from the Charges of being universally ignorant and obstinate; with some Reflections on the present State of Improvements in Husbandry.*

GENTLEMEN,

**P**REAMBLES to letters, in praise of your work, are to me detestable: if good, it will support itself\*. The following hints, on the situation of common farmers, I shall at once give you without further preface.

The

\* Though we are greatly obliged to such of our correspondents as testify an approbation of the general contents of our collection,

The conversation in any company seldom turns on country business, but the common farmers are stigmatized with the appellations of *stupid fellows*, *prejudiced clowns*, *senseless men*, who tread in the steps of their forefathers without the idea of improvement, who drudge on in the old road, rather like machines than rational animals. Much declamation have I heard of this sort, and as I am a farmer myself, shall take this opportunity of vindicating, in some measure, my brethren from aspersions not always as justly founded as peremptorily asserted.

*The horse-hoeing husbandry, the cultivation of artificial grasses, the mowing of wheat*, with many other new improvements, have found numerous advocates among gentlemen farmers: it shall now be my enquiry, whether the tenants do not act very wisely in refusing to meddle with experiments before the evidence of their senses gives them hopes of success.

In all the woodland country about Bury (I shall speak only of what I have seen, and know perfectly well) the farms are generally small, from twenty rising to two hundred pounds a year, and here and there one of more; but in general they are under an hundred: and the land lets from nine to sixteen shillings *per acre*.

It is pretty evident from hence, that no *fortunes* are to be made in them: a comfortable and decent living for the farmer and his family, and at his death a hundred pounds, besides his stock, is not very common among us.

In such a situation, would they not be prodigious fools to meddle with all the fashionable whims that are every day started in farming? The track in which they are, they know will produce something: should they leave it

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for

collection, yet do we think it unnecessary that all such testimonies should be printed: this has induced us often to retrench them as superfluities, with regard to the public at least; and we shall continue this practice, unless any of our correspondents should request the contrary: some few we have, who chuse to have their letters inserted without any alterations being made in them, or notes added; these we oblige in their own way, where it is consistent with our plan. A. O.



for uncertainties which may produce nothing?—Surely not.

Let the landlord try experiments, and I will warrant, if a few years prove them to answer, the tenant will adopt them. But men who have little money before-hand, and rent and expences regularly to pay, act very prudently in being only spectators of these new fashions till proof sufficient is afforded of their success.

The farmers I have talked with, are far from being the prejudiced people I have so often heard them represented; and many of them make no bad defence of themselves for not adopting the schemes of the gentlemen farmers.

Men who farm their own lands ought to be cautious in stigmatizing farmers, and should first consider whether their accounts are so clearly kept, that they can perceive profit arising from their farming when rent is paid, supposing they lived under another man; and should also suppose they had no other cash ever in hand than what arose from their farm: if this management is not clearly followed, it is wonderful impertinence to arraign common farmers for the narrowness of their views, when their own have not the extent to take in the fair compass of the question; yet is this frequently the case.

I know several gentlemen who are apt to talk in the common stile, and extol their own methods of husbandry, which are calculated for the improvement of land, and the raising great crops.

These are great; with them quantities of manure, frequent fallowing, &c. out-do all the neighbouring crops. Here is fund for conversation; but where are the accounts? Let me see the expences. Could a farmer, who lives on his farm alone, support it? Would he starve with twenty coomb\* an acre on his land?

Material enquiries these; but, alas! too seldom to be answered satisfactorily†.

There

\* A coomb is four bushels.

† A farmer, or gentleman, who has very large and valuable crops, may yet be a loser by occupying land. All expences are

There is a medium in every thing. The farmers, I readily believe, are rather more backward in adopting improvements than reason, or, perhaps I should say, education will allow. But, on the other hand, gentlemen and authors are yet more apt to adopt chimeras at once, and then rail at their inferiors for not being as rash as themselves.

Experiment is the rational foundation of all useful knowledge: let every thing be tried, but do not expect it of those who cannot afford it: let the landlord play all imaginable tricks with his land; if out of the game of chance a lucky hit arises, the tenant's eyes will not be shut.

Many experiments have I lately seen in this neighbourhood made at a considerable expence, and many more have failed than succeeded; not one do I know lately, that is yet sufficiently established in its credit, among even gentlemen themselves, for the farmers, with any prudence, to adopt it.

Of some of these I shall be more particular in my next letter, therefore will conclude myself, in the mean time\*, &c.

Bradfield, near Bury,

Y.

October 2, 1764.

are to be deducted from the value of the crop at market, besides allowing for the farmer a comfortable subsistence; and whatever remains, after these allowances, may be set down to the article of profit: the rent is of course to be included in the article of expences. If this was always done, the true merit of any practice would soon be known, and the makers of experiments would not be deceived by flattering, though false, appearances. More money is often got by a crop of twenty-four bushels only, than by one of forty bushels, or more, an acre. A. O.

\* We are greatly obliged to this very sensible farmer for his favours, and hope to have frequent opportunities of communicating his sentiments to the public. A. O.



## NUMBER XLVI.

*Of the Mowing Wheat, and Cultivation of Lucern; together with a Method of procuring early Spring-Feed after the Turneps are expended, and before the Clover comes in; to which is added the Course of the Crops generally sown in the Neighbourhood of Bury, in Suffolk.*

GENTLEMEN,

**A**S I have lately acquired some experience in the two articles of husbandry, the mowing wheat and the cultivation of lucern, I shall trouble you with the plain narrative of my method in each.

I should premise, that a common way with the farmers in this country is, to sow their wheat on clover pastures, only turning up the surface once; from whence it consequently ensues, that the wheat crop is not so clean as when sown on a fallow.

I mowed the half of eight acres, and reaped half, dividing the field in such a manner as to give each method a fair proportion of the weedy and clean parts.

The most judicious farmers here generally cut their wheat a week before it is quite ripe, and leave it the longer in the field in shocks, that the corn may acquire a hardness, and the weeds have time to dry and die.

I laid each lot of wheat by itself, and have since thrashed and sold ten coomb of each: the result of my experiment you shall have in a few words.

That which was reaped was fit to carry in a week; that I mowed, was so full of weeds at the bottoms of the sheaves, that, at the end of ten days, I could not carry it: if I had ventured, the sweat in the barn would have spoiled it.

The twelfth night so much rain fell, (several showers, slight ones, had fallen before, without damaging the wheat) as to be of prejudice to the corn: when a fortnight was elapsed, some of it was grown in the shock. At the end

of sixteen days, I got it into the barn, much out of humour with my experiment.

When I came to thrash, that which was reaped cost me one shilling and six-pence *per* coomb; the other, two shillings and six-pence; a very fair difference, I am convinced, considering the length of the straw, and the quantities of weeds. Weeds there must be more of than in the other method, as they reap quite over most of them.

At market I sold the reaped wheat at one pound *per* comb, and the mown at seventeen shillings and six-pence. Here, gentlemen, I shall close the comparison: if the value of a little pipy hard straw, and the saving in a slovenly expedition, are supposed to pay me two shillings and six-pence *per* coomb, by all means let the practice advance: for myself, I shall be much more inclined to reap my oats, than mow my wheat\*.

Now for a few remarks on lucern, of which I also speak from experience.

I fallowed and ploughed two acres of light gravelly land till it was clear of weeds: this is the soil Mr. Miller, in his Gardener's Dictionary, says is most suitable to it; I therefore chose it in preference to several other kinds in my farm.

I sowed it in his manner, twelve pounds to the two acres, in drills three feet from each other, the beginning of April. The weather was favourable, and the plants came up tolerably well and regular.

During the whole summer I kept the spaces between the rows quite clear of weeds with hand-hoes, and gave it two ploughings, turning the land up to the plants.

The

\* As our correspondent admits that his wheat grew on a clover lay, and was much more weedy than what is sown on fallow, perhaps he makes rather too precipitate a conclusion against the practice of mowing wheat: surely, where the land is clean, it may be of service, was it only in point of expedition in catching wet harvests: however, we leave this point to be defended by our public-spirited correspondent who made the experiments in Northamptonshire. O.



The hoeing was a very considerable expence to me; nevertheless I was determined to give the plant a fair trial, therefore did not let the weeds rise at all.

After all the trouble I had with it, and the raillery I met with from the neighbouring farmers, I was rewarded, about the beginning of September, with three hundred of lucern hay, the value of which did not a twentieth part pay even the hoeing of the crop.

The plants died away, and but few put out their leaves again in the succeeding (last) spring.

I ploughed up the land, and sowed it with white oats, the largeness of which crop made me some amends for my disappointment, as I do not doubt having fifteen combs *per* acre when they are thrashed.

As I laid no dung on the land, I attribute this extraordinary crop to the frequent hoeings.

Any person who has read the article *Medica* in Miller's Dictionary, and Mr. Rocque's Short Treatise on Lucern, will perceive the methods to be diametrically opposite, as well as the opinions of the proper soil. For my own part, I am persuaded Mr. Miller gave precepts for cultivating a plant, the nature of which he was ignorant of himself. It is to be regretted that authors, who write on gardening and husbandry, will not keep within their due bounds, and not ruin their compositions by vain attempts at universality\*.

Since the trial I made of this grass myself, I have heard of several persons who have been equally disappointed with myself, in following Miller's directions; and also of two or three, who have sown lucern in Mr. Rocque's method, on a rich mould, who have succeeded the first year very well, but with some doubts whether the crop will last.

If the description I have heard of lucern, and its excellencies, is true, it would be a most valuable acquisition in all this country. Our only artificial grass is clover, which we can very seldom turn cattle into before the  
tenth

\* Should Mr. Miller chuse to say any thing in defence of his method of cultivating lucern, our impartiality will certainly prompt us to give his letter a place. O.



tenth or twelfth of May, long before which time our turneps are gone; so, for want of some grass which comes earlier, we are at a vast expence to feed our cattle, especially if the spring proves cold.

To supply, in some measure, this want, I have generally, at Michaelmas, sown a few acres of rye for feed in the following spring, and afterwards ploughed and prepared the land for turneps: and I proposed trying coleseed for the same use.

The summer-feed of clover lets here extremely well. This year I had not enough for my own use, and being obliged to hire five acres of a neighbouring farmer, I gave him thirty-five shillings *per* acre for the feed, from May the tenth to Old Michaelmas-day; and I have known to forty-five shillings given.

The common turn of our lands here is, first year wheat, second barley or oats, third clover, fourth wheat, fifth barley, &c. sixth turneps, seventh barley, eighth barley, ninth clover; with such variations as accidents, or the seasons, occasion\*.

I am, GENTLEMEN, &c.

Bradfield, near Bury, Y.

October 6, 1764.

## N U M B E R XLVII.

### *Of manuring Land at a large Expence.*

GENTLEMEN,

**T**HE following is an instance of manuring at a very large expence, which I am perfectly well acquainted with, and have long seen the effect, which is not, however, so certain but some neighbouring farmers dispute it.

I should

\* We should be much obliged to such of our correspondents as would send an account of their course of crops, as this gentleman has done; also the nature of the soils, and the methods of husbandry, peculiar to their respective counties or districts. O.



I should be glad to have the opinion of some of your correspondents, whether the prospect of profit equals the certainty of the expence.

A farmer, at the distance of about four miles from the town of Bury, has regularly, for many years, employed his team, and a stout waggon, in bringing manure from that town.

I have brought many loads myself, though nothing in proportion to him: from what I have experienced, and from his account, the expences on each load are as follow:

	s.	d.
For a waggon-load of about one hundred bushels of manure, either cinder-ashes, old mortar, hog-muck, rotten horse-muck, or cleaning of the streets, &c. mixed, one load with another costs	3	0
A man and a boy a day, (little time is to be spared after the horses are cleaned and well looked after, and the manure unloaded)	1	6
Turnpike	0	6
The work is generally done at the most leisure time of the year, mostly in winter, when the farmers allow their man a stated quantity of corn and hay for their horses when they do not work: they must have extraordinary, on account of the journey, a bushel of oats, which, at six shillings <i>per</i> coomb, is	1	6
The lowest that can be reckoned for chaff and hay, is	1	0
The working the horses in drawing so great a weight, (frequently four tons, and generally three and a half) can scarcely be laid at less than one shilling <i>per</i> horse (I am sure I would not let my horses at that rate)	4	0
	11	6

In this account, nothing is reckoned for the wear and tear of waggon, harness, and horses shoes, (no trifling articles;) and yet each load amounts to eleven shillings and

and six-pence brought home, besides the after-expence of spreading it on the land. In appearance this can never answer: but no farmer in the country understands business better than this man, none grows such great crops, (for he is almost constantly manuring some field or other) and he is evidently and well known to be in a very thriving condition.

He began with a very small farm, and now rents above two hundred a year.

*Query.* Whether the above expences are not too great for the crops to repay \*?

Whether the money would not be better laid out in manuring with clay, which is to be had every where in this country? Our soils are, in general, either a loam, brick earth, or woodcock, and under them clay: we can have it thrown out of our ditches (by which means also our fields are drained) at two-pence half-penny *per* tumbrel-load of thirty bushels, and filled and spread at two shillings and six-pence for every twenty loads.

I am, GENTLEMEN,

Your constant reader,

Bradfield, near Bury, Suffolk,

Y.

October, 1764.

\* Our correspondent observes, that each waggon-load of manure, of about one hundred bushels, costs the farmer above mentioned eleven shillings and six-pence: supposing one waggon-load, as above, to be equal to three tumbrel-loads, it will be three shillings and ten-pence *per* load. Now we have often known farmers give five shillings *per* tumbrel-load for hog-muck, coal-ashes, &c, made by the poor families in the country towns in Essex: this amounts to fifteen shillings the waggon-load; and it is certain that the farmers, many miles round London, fetch manure from the metropolis at a still larger expence: did it not answer, they would soon drop the practice. O. E.



## NUMBER XLVIII.

*Of the Benefit of Chalk to a cold, stiff, clayey Soil.*

GENTLEMEN,

**P**ERMIT an old man, for once, to trouble you. My experience has been great in many matters that relate to husbandry. On the present occasion I shall give you a few, I hope useful, hints respecting the application of chalk as a manure to a clayey soil.

I have a little property, which I have many years occupied myself, in the county of Essex.

This farm is situated near enough to the port of Maldon for me to enjoy all the advantages I can derive from its neighbourhood. The greatest part of the corn I grow is sent to London by the hoys, for the London factors generally buy it of me for a good price.

These hoys, which go with corn to the port of London, sometimes bring back groceries, &c. for the country shopkeepers; at other times they touch at the Kentish chalk-pits, and take in a lading of that excellent manure: I call it excellent, because I have often very sensibly perceived, by the encrease of my crops, the great benefits resulting from the use of it.

I have been informed that this manure is very good for some sorts of light sandy soils; but this I never experienced: I should be glad if some of your correspondents would send you, for the satisfaction of the public, an account of some few instances in which this practice has been successfully followed, as many parts of England might then be morally certain of receiving benefit from a manure which we cannot too much praise, but the use of which, in all probability, they now know nothing of.

If chalk can be of any service on a sandy soil, it must be by filling up the interstices, or pores, which are too large, with the small particles which are continually washed off the lumps. This mixture gives, I suppose,  
the

the soil some degree of consistence, thereby making it more proper for the purposes of vegetation.

On a clay, I know, the chalk acts very differently; for here, instead of making the soil more compact, which is too much so already, it insinuates itself into the small pores, and, raising a fermentation, exposes the clay more to the operations of the frosts, rain, sun, and air; by which means its too coherent particles are loosened, and it is reduced to a state of pulverization.

We all know that clay, when reduced, either by fermentation or attrition, into small and minute particles, is an excellent soil for affording plenty of nourishment to almost every kind of vegetable; it is therefore natural to us, when possessed of a stiff clay, to go in search of means for producing these very desirable effects.

Chalk has been long allowed the palm in this respect: our ancestors, the ancient Britons, used it with great success; and the practice, as warranted by constant experience, has been handed down to the present age: is it not then a pity but a custom so profitable should be made known to all parts of his majesty's dominions? With this intent it is I write, and I hope that the result of my long experience will be, at least, of some service to your readers.

The chalk we use in Essex is mostly brought from Kent: it agrees well with our clays, and many fine fortunes have been made in this county by chalking farms: yet what may appear very strange, but is not less true, this same chalk, when laid on the clayey lands in Kent near the pits, does by no means answer the farmer's expectation.

It is not, perhaps, easy to account for this difference in the effects where the causes are seemingly the same; yet, if I might hazard a conjecture, I should be apt to imagine that the Kentish clays, in some part of their substance, partake of the nature of chalk; and this may be a reason why the latter has not so good an effect in Kent as in Essex, the manure being in quality nearly congenial with the soil on which it is laid. Be it as it may, it is this



which occasions the saying among farmers, that *chalk agrees best with those lands which are farthest from the pit.*

It has been a common saying among farmers, that chalk lasts only for a certain number of years, after which it leaves the land in a worse state than that in which it found it; but this, I am apt to think, is a mistake, owing to prejudice, and negligence, or ignorance.

When land has been chalked, under a notion that it cannot be hurt by cropping, they generally keep it in almost-constant tillage, and it pays well for the ploughing; but then the soil being, by such constant working, reduced into a pulverized state, the chalk escapes through the now-enlarged pores of the clay, and forms a crust under the loose *stratum* on the surface of the hard bed beneath, being washed down by the rains.

The particles of clay, being now deprived of their coatings of chalk, adhere one to the other, enlarge their surfaces, and become at length a coherent mass of stiff soil, like what it was before the land was chalked at all, not worse in quality, but nearly in the same state. I conjecture that the chief reason which induces farmers to think the land impoverished by chalk is, because they have, whilst the manure acted with its full vigour, been for many years used to great crops, forgetting, or perhaps never knowing, what crops the land yielded before any chalk was laid upon it.

I can by no means be induced to believe that chalk leaves land, after a number of years, in a worse state than it found it: if I allow that the whole virtue of chalk may, in time, be exhausted; or, in other words, that the effects it has on the clay, in dividing its too compact particles, may, in a number of years, cease; it is, I think, allowing a great deal. My real opinion is, that a clay will always be the better after it has been once chalked.

A great deal of care is requisite in land after it is fresh chalked: if the large lumps are buried before they are strongly impregnated with the influences of the atmosphere, they will lie under ground undissolved in a hard mass for

a great

a great number of years, without benefiting the land in the least. For this reason, the farmer must not be in a hurry to bury his chalk: in fact, the longer it lies above ground, the better, as it will then gradually be reduced into an impalpable powder, which, being mixed and incorporated with the clay, lessens the cohesion of its parts, enlarges its pores, and disposes it to yield that nourishment to vegetables, which, in its natural state, it is too retentive of.

Clay is, by nature, possessed of a large stock of the food, whatever it be, which plants most delight in; but it is a stubborn soil, and will not, till compelled to it by some extraneous cause, give forth any of its riches. If it is pulverized by the instruments of husbandry which act by attrition, it becomes a proper bed for the reception of the roots of vegetables; but this pulverization is not to be effected without great expence of time and trouble: the difficulty of this operation it was made our ancestors search for some easier and shorter method of reducing the solid particles of clay; they effected it by means of fermentation, and this fermentation was raised, for the most part, by rotten horse-dung.

When this manure became scarce, and difficult to be procured, it was necessary to resort to some other remedy to correct stiff soils. Chalk was found well adapted to the purpose: the use of it was after many years almost universally adopted, and experience has now, for many ages, justified the practice.

I have already, I think, observed that chalk improves clay, not by adding to it any vegetative quality, but by mixing intimately with its substance, and lessening the cohesion of its parts.

Let us, by way of illustration, suppose any given quantity of clay mixed and incorporated with a proper proportion of chalk, it will be found that the clay will possess a degree of lightness which nature has denied it. Let this mixed earth be spread on a floor exposed to the weather in winter-time; let it be frequently sprinkled with water, and be stirred about several times a-day for  
some



some months: on an examination it will then be found that the chalk has subsided, and the clay become more compact than it was, but not so compact as before any chalk was mixed with it.

The subsided chalk will form a complete *stratum* under the bed of clay.

I have been the more particular in this account, because on the principle of subsidence have I founded a practice experienced to profit by myself, and therefore, I think, not totally improper to be recommended to the notice of others.

I had heard it long complained of, that the benefit resulting from chalk ceased after a course of years. I always thought, and indeed found, that the chalk subsided: this made me form an opinion that the chalk, even after it was subsided, might, in part at least, be retrieved; for the earth, which had been loosened only to a certain depth, was, at the bottom of the loose mould, a hard compact body, which the chalk could not penetrate: here therefore it must, of course, rest in its subsidence, forming a thin coat on this hard body.

About forty years ago, I chalked the greatest part of my farm in the manner prescribed by the custom of this country. For about fourteen years I enjoyed very good crops, but at the end of that term they began to fail a little. As necessity is the mother of invention, I came to a resolution of trying an experiment on a field of twenty acres; accordingly, when the time came, in which it was to receive a whole years fallow for a crop of wheat, I caused the whole of it, soon after harvest, to be ploughed twice in a place, one plough following another in the same furrow.

By these means I turned up an entire new earth, on which I immediately laid in the proportion of about three loads of chalk an acre, suffering it to lie rough all the winter.

In the spring I gave it a second ploughing, and bestowed on it three more ploughings before Christmas, when I again left it rough for the winter.

I must

I must not, however, fail observing, that in all the ploughings after the first, the share went only the ordinary depth.

In the second spring I raised as fine a mould as I could, by various operations, and sowed the field with barley, of which I had at harvest a crop to my entire satisfaction : my next crop was wheat, on which I sprinkled some clover-feed, and this brought the land into the usual course of husbandry.

The reason why my land begins to fail in about fourteen years after chalking is, because I allow more ploughings to each crop than any of my neighbours, and these frequent stirrings cause the chalk, as I imagine, to subside sooner.

My method answered so well, that I managed all my chalked land in the same manner with good success, and had, in consequence, a succession of good crops for ten years more.

When the ten years were expired, I gave my land another trench-ploughing, which never failing to recover the chalk, I renew it at regular intervals, but lay no fresh chalk on after the first trench-ploughing, being in all the rest content with what is already in the land.

This method has stood the test of many years experience ; and I have not the least reason to ascribe it to any thing peculiar in the quality of my soil : why therefore should it not succeed as well with others as it has done with me ?

Let me persuade such of your readers, as it any ways suits, to make the experiment ; it cannot be any great expence, and the result may turn out greatly to their advantage.

This doctrine of the subsidence of chalk is certainly founded on reason : the predominant natural soil will always precipitate that which is only adventitious, and in smaller quantity ; for the same observation holds good when clay is laid on chalk.

This subsidence may also be observed when clay is laid on sand, or sand on clay, as a manure, and might, perhaps,



haps, be extended to many other articles, so as to be deemed a general principle.

Few know the benefits resulting, on some occasions, from deep ploughing; but in this, as well as in every other matter, discretion is to be the grand guide; and I would, by all means, advise the farmer to examine into the depth of his soil, by remarking what is thrown out of his ditches, or by the help of a borer. Let him judge by this, and he cannot well go a-stray.

I must also give another caution to my honest brethren the farmers, which is, not to be in too great a hurry to crop a field after it has had a trench-ploughing, or double ploughing; for the soil turned up from any considerable depth will be somewhat crude in its nature, till it is meliorated by the influences of the sun and air.

I have generally found that one whole year's fallow is sufficient to effect this; but two winters and a summer I never knew fail: it is chiefly frost which contributes to pulverize the chalk, and sweeten the soil; not but that it receives great benefit from the rain and sunshine, and particularly from snow, which is strongly impregnated with nitrous particles: all I mean to insinuate is, that one day's frost, in my opinion, contributes more to sweeten a stiff rough soil, than two days sunshine, rain, or snow.

Let me, in this place, hazard a conjecture which may, however, prove a fact: the reason why frost so much contributes to disunite the particles of clay may be owing to its swelling the clods, and encreasing their surface: the cavities occasioned by this swelling are filled with ice: when a thaw comes on, wherever the ice was, is a *vacuum*, and the particles, of which the clay is composed, being separated one from the other, crumble and fall in pieces: when they are in this state, and the land has been chalked, a single ploughing, well timed, will cover their surfaces with the chalk powder, and prevent them from speedily adhering one to the other. This is reason, and I have often remarked it to be true: whether it be sound philosophy or not, let your more intelligent readers judge.



A word or two more on the subject of chalk.

Your readers, who have been in countries where there are quarries of stone, must have observed, that, whilst in the quarry, it works better than after it has been exposed to the sun, for it hardens considerably after it has been out of the quarry some time. It is the same with chalk, which is apt to be hardened by lying a summer in the sun: for this reason it is adviseable, that the chalk intended for manure should be dug as soon as the winter sets in, and laid, out of hand, on the land. This method and time of chalking may occasion some encrease in the expence; but the farmer will be well paid for it in the end, and he will, by this management, sooner reap the benefit of his labours.

Might I, in this point, give the farmer a little more advice, it should be to cart his chalk in tumbrels with very broad wheels, to carry light loads, and allow cattle enough to each tumbrel: by this means his work will go smoothly on without impediment; his horses will not be damaged; and he may, to make himself amends, carry more loads than usual in a day, for with a light load it must be allowed they will step faster.

Let it not be imagined, from any thing I have said in this letter, that I trust solely to chalk for bringing me good crops; no, I always bestow, once in a course of three or four years, a reasonable coat of compost dung. I do not lay on the chalk with any intention that it should enrich the clay: my desire is, that it should bring it to the nature of a loam, as the dung will then take effect, and insure the farmer a large crop, provided he guards himself against the depredations of weeds, which are too apt to have their seeds mixed with the dung made of long straw, and often grow faster than the corn, with which the land should be cropped. Dung, like many other things, is of great use when prudently applied; but it is dangerous in the hands of an ignorant landholder: the expence of procuring it, in any quantity, will ruin him, and his crops will go near to be choaked by the encroaching weeds.



One thing more, and I promise to conclude: excuse the prolixity, as well as garrulity of an old man.

I have used chalk as a manure both for meadows and pastures, but with very contrary effects.

To exemplify these matters, permit me to observe, that in the year 1740, I laid, on a meadow of seven acres, a good dressing of chalk, which, being dissolved, seemed to soak into the land and be lost. The consequence was, that for the four following years I had great crops; but they afterwards dwindled, the grass-roots died, and I was in the end obliged to plough up my meadow, in order to lay it down in better heart, after taking two or three crops of corn from it.

My neighbours told me that the chalk, by its warm quality, made the land give forth a large encrease, and exhaust itself; but I could not give into this opinion: my notion of the matter was, that the chalk, by opening the pores of the soil on the principles already mentioned, gave a passage for the frost to the roots of the grass: this, for a season, caused a large encrease, but in the end killed it. I have since been persuaded, that if I had rolled the meadow the second year, after laying on the chalk, with a large roller, it would have been of great service, and preserved it for some years longer by closing the pores.

At the same time I laid some chalk on a pasture which I always fed, but never mowed. The effect it had on this field was really surprising; the grass was sweetened, and encreased in quantity for years afterwards, the dung of the cattle keeping it in heart; and it is at this day the best pasture field I have on my farm.

Before I conclude, I must request some of your correspondents to enlarge on this important subject of chalk: there is great room for it, as it may be laid to advantage even on a sandy soil.

Yours, A FARMER.

Hundreds of Essex,

September, 1764.

## NUMBER XLIX.

*A Letter from the Rev. Mr. Comber to the Editors; containing an Account of an antient Way of making quick-set Hedges with Thorns, &c. also with Furze; and an Enumeration of the principal Species of Furze.*

GENTLEMEN,

HAVING met with an account of an ancient manner of making of quick-set hedges with thorns, &c. in that excellent writer Mr. Norden, I shall communicate it to you, as it appears to me not to have been mentioned by any letter-writers which have fallen into my hands; and I shall subjoin some observations.

Baylie. “I pray, what is the best stuffe to make quick-set of?”

Surveyor. “The plants of white thorne, mixed here and there with oake and ashe.”

Baylie. “But the plants are not easily gotten in all places.”

Surveyor. “Then the berries of the white, or hawthorne, acorns, ash-keyes, mixed together, and these wrought or wound up in a rope of straw, will serve, but that they will be somewhat longer in growing.”

Baylie. “How must the rope, thus stuffed with the former berries, be laid?”

Surveyor. “Make a trench at the top, or in the edge of the ditch, and lay into it some fat soile, and then lay the rope all along the ditch, and cover it with good soile also; then cover it with the earth; and ever, as any weedes or grasse begin to grow, pull it off, and keepe it as cleane as may be from all hinderances; and when the seeds begin to come, keepe cattle from bruising them; and after some two or three yeares, cut the young spring by the earth, and so will they branch and grow thick; and if occasion serve, cut them so againe, alwayes preserving the oake and ash to become trees.”



*Baylie.* “What is the best time to lay the berries in this manner?”

*Surveyor.* “In September or October, if the berries be fully ripe.”—See his *Surveyor’s Dialogue*, pag. 200 and 201.

*Observations on the above-recited Practice.*

I. The reasons of working the seeds into a rope of hay are not given; but probably some of them might be, first, to preserve the seeds from birds and other vermin; secondly, to keep them warm in the winter succeeding their sowing, and preceding their spring.

II. The acorns and ash-keys, in this method of planting, should be placed with great care, at proper distances, in the rope; because, if the trees to spring from them are to be preserved, they should not be too near; and if they are not to be preserved for timber, they will contribute poorly to the strength of the hedge. However, as some of the acorns, or ash-keys, *may*, or rather *must*, fail, it must be adviseable, in this method of sowing, to work two or three acorns, or keys, nearly together, that if all come up, the best may be left where they spring, and good ones remain to supply deficiencies elsewhere.

III. I cannot imagine why the black thorn was not added in this manner of setting quicks.

IV. The practice of cutting down the spring at two or three years growth, seems to have been grounded on a wrong principle; for though the branching of thorns makes the thickness of the hedge, yet the early years of their growth seems a very improper time to encourage this branching. The cutting down of the first spring will not strengthen the stem, but cause its branching. It will much rather weaken the vigour of the upright stem, whence all the branches should proceed. It seems therefore a backwarding of the growth of the hedge several years for no advantage, but with disadvantage. This part of the ancient method seems then judiciously omitted by the moderns.

V. The



V. The reasoning in my last observation confirms to me what I have often before remarked, *viz.* that we seem not to be arrived at perfection in our culture of the thorn; and that encouraging the main stem, by lopping off the side branches for some of the first years, seems a *rational* improvement.

In a former letter, gentlemen, I observed, among other uses of furze, that I had seen very good quick hedges of furze in *Bedfordshire*. I will now add what that excellent old writer Mr. *Norden* says on the subject, *viz.*

*Surveyor.* “ In that part of *Suffolke*, [upon the sea-coaste] they make another use of them [furze]: they plant them in hedges, and the quick-set of them make a strong fence.”

*Baylie.* “ Very filly quick-set hedges, I would thinke, can be made of simple furzes.”

*Surveyor.* “ Such as after two or three years being cut close to the earth, they will then branch and become so thick as no hedge, if the ditch be well made, and quick well set, can be more defensible, being set in two or three ranckes.”——*Surveyor's Dialogue*, pag. 198, 199.

Here I must observe, first, (as before) that the cutting down of the young furze seems a wrong method, as this plant naturally spreads and branches sufficiently. Nor do I think, secondly, that the setting of two or three ranks is adviseable; for the roots of one rank will obstruct and impoverish those of another, and prevent their growth: and for the same reason I take the setting of double hedges of all sorts to be an absurd practice. If one hedge is well managed, it is sufficient; and more hedges waste ground to no purpose; one of them being always neglected by posterity, unless where both have been so neglected and ill managed, that one irregular bad hedge, perhaps pieced out with dry fence, is made of them both. Of this bad method of our fore-fathers I have reason to complain in some parts of this estate; and I see neighbours who have the like.

Less



Less objection, gentlemen, can be justly made to double lines of quick-set, a few inches each from the other; because these may more easily be reduced into one good hedge, than where the lines are at the distance of some feet or yards, and properly *double hedges*; yet, I think, there is an absurdity even in this method, as the expence of setting double rows is just double to that of setting a single one; and the failing plants may easily be supplied to a single one; and the \* inconsistency of two lines of quick-wood, so near each other as at the distance of a few inches, will probably occasion many plants in each line to fail. But to return, gentlemen, to the furze. As it is acknowledged that this plant loves dryness, I have observed that it thrives exceedingly well, as an hedge, when a good bank of sandy soil is thrown up. I will now, gentlemen, only enumerate a few of the principal species of furze, and conclude.

The first is a species which grows *very tall*, and by Mr. Norden is called the *French furze*, (see page 198 of his Surveyor's Dialogue) and said to abound in *Devonshire*, and some parts of *Cornwall*, and is, doubtless, the most profitable for those who would encourage the growth of this plant for fuel. Mr. Norden says, that people made great profit of them in faggots, sold at *Exeter*, &c. in his time. This species is most profitable to be planted in places where other fuel is scarce, and especially where lime-stone is plentiful and fuel scarce.

The second species is by Mr. Norden called the *dwarf furze*, and very justly, in comparison of the former; and abounds, as Mr. Norden rightly observes, with us in the North. It naturally branches round, and grows to no great height; and in some places the bushes grow so perfectly round and tapering, like a pyramid, that one would  
imagine

\* Intelligent gardeners seem to be so sensible of this principle, that whereas every gardener used to plant two rows of peas within a few inches of each other, they now plant only one row, and affirm, that they will have *nearly*, if *not entirely*, as large a crop on one row as on two. COME.



imagine them managed by the shears. Though all the furze with us seems to be of this second species, yet the plants differ according to the soil. The dryer and richer the soil, the more perfect and high the furze; the wetter and poorer the soil, the more broken with decayed branches, and the lower the furze. Farmers are often told, that *ploughing* is the destruction of furze, yet, after laying their arable grounds, frequently see the furze rise to a greater height than before; for which two reasons may be given, *viz.* that the making of furrows in the course of ploughing has dried the ground; and that the soil is enriched by the manure put into it in the course of ploughing. The seeds of furze, like those of broom, will lie long in the ground undamaged, and when the plough brings them up, flourish. This second species of furze is the properest for *hedges*, if not for *fodder*.

The third species is a kind of *bastard furze*, which grows not above a foot high, or two at the most. Its form is, in all respects, that of furze in miniature; but the prickles are so small and weak, that they hardly hurt the tenderest hand. Some call it *gorse*, (though this name is by others given to furze in general) but with us in the North it is called *cat-whin*. It grows on *poor, worn-out* ground; and it is said that no cattle will feed upon it, and the only effectual way to destroy it is to amend the land.

I am, GENTLEMEN,

Your obedient servant,

East-Newton,  
May 21, 1764.

THOMAS COMBER, jun.



## NUMBER L.

*An Answer to Objections against Mowing of Wheat, with remarkable Facts relative to the Price of Reapers, &c. and the Abuses of Gleaners.*

GENTLEMEN,

AS you invite some of your kind contributors (in Note \* page 136 of your Third Volume) to answer *An Old-fashioned Farmer* on the subject of mowing of wheat, I, who have endeavoured to preserve an exact impartiality in the case, and allow some disadvantages to attend the practice, esteem myself properly enough qualified for the task, and look upon it as a piece of justice to the public to defend a practice, the advantages of which seem greatly to over-balance its disadvantages.

The title of “Arguments against mowing Wheat” is given to the *Old-fashioned Farmer*’s letter; though indeed it deserves it not, being composed of groundless suggestions alone, not even reduced to the appearance of argumentation.

However, as the parade of objection may with *some*, or *many*, pass for solidity of reasoning, and in some degree obstruct an useful improvement in agriculture, I will, gentlemen, consider the several suggestions so far as they can be thought by any sober man to deserve notice.

“First, (says he) we are in no danger of wanting labourers; because numbers of those who rented small farms, must become such, or starve.”

Now, let us suppose, that the persons who rented small farms, must all become labourers in agriculture, or starve, (though we need grant no such thing, for many of them may apply themselves to labour in cities, as porters, &c. or in mines, &c.) will it follow that we must have as many hands in harvest, in proportion to the corn to be cut, as we have had? No such thing; for the engrosser of farms

farms (though probably an enemy to the public weal in some other respects) may grow more corn on his three or four farms united, than was grown on them when separate; for it is certain that two good teams, in one man's hand, may work much more ground effectually, and produce better crops, than a great number of weak teams in the hands of several persons distracted by various pressing exigencies.

But if we suppose not only that no fewer hands remain at present for works of agriculture, but also that no more corn is grown, does it follow that we are not likely to want hands in future for the uses of agriculture? No such thing: for if the small renters be supposed unable, when turned off their farms, to apply themselves to any other way of life, and consequently that they must either *labour in husbandry*, or *starve*; yet these considerations will not influence their children, but rather the contrary; for when they see, by their parents example, that they are not likely to settle on little farms, they will, while young, turn their minds to some other way of life; and consequently an objection to the uniting of several farms arises from the probability, that a decrease of labourers in husbandry will ensue. So little, gentlemen, does your *Old-fashioned Farmer* seem to know of the nature of that iniquitous practice, against which he so loudly declaims.

But still further: our *Old-fashioned Farmer* quite misses the true point in question. It is not, whether we *now have*, or are *likely to have*, fewer labourers in agriculture than usual? but, whether we have *enough* to get in our crops, with *sufficient expedition*, in the common way of reaping?

That we have not enough to answer this purpose, in many parts of the kingdom, is *most notorious*; and our *Old-fashioned Farmer* must appear rather confined in his ideas, if, from a persuasion that they have labourers enough in that corner of *Warwickshire* where he lives, he should discourage the introduction of reasonable methods of supplying the want of labourers over other parts of the kingdom.



I shall, in the sequel of this letter, record a striking instance or two of the want of labourers in some parts of this kingdom.

“ Secondly,” our Old-fashioned Farmer affirms, “ that we have no need to introduce the *new-fashioned* scythes among our wheat, because more of that article is sowed than used to be.”

Here the *Old-fashioned Farmer* seems again to be mistaken; for if we should grant, (which we need not) that not one half, nay, not a quarter of many corn fields continue when enclosed in tillage, yet will it not follow, that more corn, more wheat, is not sown than used to be; for very generally, when *corn fields* are enclosed, in order to be laid, it is with design to take up, and convert to tillage, large commons, or other barren uncultivated pieces of ground, perhaps *adjoining*, or, at least, *near to* such enclosed corn fields: or, if such new enclosures for tillage be not in the village, they are generally in the neighbourhood of such enclosures for pasture and meadow.

But if such new enclosures for tillage be not made, yet the good husbandry of breaking up of old moss-grown leys, especially sheep pastures, begins now to be so well known, that we have no reason to conclude, that less corn is sown because some corn fields are enclosed and laid to grassing.

Again, gentlemen, the improvements in tillage have, of late years, been so great in many parts of the kingdom, that it seems probable, that the quantity of corn, and of wheat in particular, now grown, is greater than it used to be. But be this point as it will, it is nothing to the point in question, which (as I observed above) is, whether we have hands enough to get in our corn with sufficient expedition? A question which must, I am sure, in many parts of the kingdom, be answered in the negative; consequently, every method of supplying this want of hands deserves encouragement in a national view of things.

“ Thirdly,” says your correspondent, “ the old-fashioned way of reaping is much better for use, to the  
“ farmers

“ farmers *in general*, than the new-fashioned one of “ mowing.” This assertion he endeavours to support by *suppositions*, that more *full ripe* corn will be knocked out by the *scythe* than the *sickle*; that it must be *full ripe* in order to be bold; that when lodged it cannot be mown without great loss; and that many ears towards the bottom of the sheaves will be frequently spoiled in wet weather.

In answer to them, it may, gentlemen, be sufficient to say, that no wheat can be suffered to stand till it be *full ripe*, without great loss in any manner of reaping; that in order to have corn *sufficiently bold*, it is not necessary that it should be *fully ripe*; that an examination of the motion in reaping with the *sickle* and *scythe*, shews that it is likely the corn will shake *as much*, (or *more*) when reaped with the former, as when with the latter; that experienced mowers will cut even lodged wheat without great loss, or, if they could not, this might be an excepted case; that though some ears will be found towards the bottom of the sheaves, and consequently mowing is not so neat a way as cutting with the sickle, nor so saving in this respect, yet the loss hence arising is not considerable, and greatly over-balanced by the advantages resulting from this method; that in a wet season corn will suffer, *however reaped*, and that a few ears wetted at the bottom of the sheaves cannot spoil the whole, which will be also exposed to the rain, &c. and finally, that the ears which lie towards the bottom of the sheaves may, when they are opened, be easily taken out, if spoiled, and not threshed with the good.

I hope, gentlemen, by this time, your correspondent may have had occasion to see that he has judged, perhaps, rather *too hastily*: and indeed he seems to have undertaken to decide on a subject he has not enough considered; for you will observe, gentlemen, that he opposes the *mowing of wheat* only as a method of reaping with *new-fashioned* scythes: he does not even hint that he has ever seen one of them used in his part of *Warwickshire*; nor does he



appear to have any idea of wheat mown with *plain English scythes*. What tolerable judgment then can he be supposed to form of the neatness, &c. of this method of mowing?

By the bye, it appears from the example of this correspondent, gentlemen, how averse to innovations, and especially when introduced with foreign names, &c. our farmers are; and, consequently, with how much reason I have suggested, (in a former letter) that the *English scythes* should rather be used for mowing of wheat than *foreign* ones, unless these latter greatly excel the *former*.

I shall conclude this letter with some instances of the want of labourers in harvest, and the abuses of gleaning, as closely connected with the original subject of this paper.

As I was riding, about a month ago, within a mile of this house, I met three labourers, with wallets and sickles, travelling northwards. The circumstance of their having sickles surprised me, as I should otherwise have concluded that they were returning from our Yorkshire wolds.

I enquired, and was answered, that they had been in *Cambridgeshire*. I then enquired, whence they came; and was answered, from *Carlisle*. I was then curious to know in what time they performed their journey, and was told, that they were nine days in going, and the like number in return.

I asked them, what wages could induce them to take so long, so hazardous, and so expensive a journey? They replied, that they took reaping by the acre, and found their own meat, their masters finding them ale and beer. I desired them to oblige me by an honest declaration what wages they made: whereupon they assured me they made a guinea *per week* each, or three shillings and six-pence *per day*; and one of them added, that one week they made two pounds *per man*, or six shillings and eight-pence *per day*. This account suggested to me many reflections, as I rode home; some of which here follow

I. What

I. What a want of labourers must there be in *Cambridgeshire*, when they are obliged to entertain people who come from such a distance !

II. How profitable must farming be in its own nature, when, under such disadvantages as attend such a want of labourers, farmers still carry it on !

III. What pity that the *Cambridgeshire* farmers cannot be supplied with hands from places much nearer, that the labour of eighteen days, of three whole weeks, (how great a portion of time in the harvest season !) may not be lost to the public in every man's labour who takes this journey !

IV. How desirable is it that mowing of corn were introduced into *Cambridgeshire*, as a man with a scythe can cut down so much more than with a sickle !

A noble lord, within two miles of me, who is a great improver, told me, as we walked, about a month ago, among his improvements, that the common farmers in a little village, to which he pointed, about a mile from him, gave this year, to the mowers of grass, meat and drink, strong and small, and two shillings and six-pence *per day* ; whereas the usual wages were one shilling a few years ago.

About this village little corn grows, so that the farmers could not be hurried, in *hay harvest*, by a prospect of corn harvest.

How expedient, in a country in which the wages of labourers in agriculture are so high, must the use of the scythe in corn be !

One of the richest commoners in the nation, who is possessed of one of the finest seats in it, in respect to gardens, &c. and who therefore knows well the price of labour, ascribed its general rise (in a conversation at another rich man's table, of which I partook) to the high price which undertakers of turnpikes give for a piece of work to be expeditiously done ; and this cause has probably co-operated with many others. The subject calls for the attention of the legislature loudly.

I have



I have elsewhere, gentlemen, observed a gross abuse of gleaning, when able-bodied women refuse to work at harvest, that they may, under pretence of gleaning, steal much more corn than honest wages would buy.

Though this abuse does not prevail much in this neighbourhood, yet another does, not much less gross, *viz.* a woman brings with her, tall girls and boys: she shears, and not content with the prodigious gleanings of her children, herself gleanes, from the end of the land at which they finish, to that at which they begin; thus robbing her master both of his corn and her time: and yet, such is the want of hands, that he is forced to submit in silence to see himself robbed, and a family carry away, for one woman's labour, besides her wages, perhaps as much corn as would make several sheaves, consequently worth much more than her wages. Does not this infamous practice loudly call for a reform, by introducing the scythe? I am, GENTLEMEN,

(In this instance)

East-Newton,  
October 15, 1764.

Your invited correspondent,  
THOMAS COMBER, jun\*.

## NUMBER LI.

### *Some useful Observations on Malting.*

GENTLEMEN,

**I** Do not remember to have seen in your collection a single letter on the subject of malting, which you must certainly acknowledge is an object well worthy the farmer's attention.

In the part of England where I live, (on the borders of Suffolk, near the county of Essex) many of the farms have  
malting.

\* We shall be much obliged to this gentleman whenever he pleases to send us the pieces he mentions: we have by no means been able to recover the packet he sent by his York correspondent. E. O.

malting-offices annexed to them : it is therefore important that these men (and I find the case is the same in many other parts of England) should be made as perfect as possible in the practice of that which contributes greatly to their getting a comfortable livelihood.

After this preamble, it may, perhaps, be expected that I should give a regular detail of the several methods of making malt : but this is by no means my intention ; for should I attempt it, I could not but intrude too much on your work, which must afford room for the letters of other correspondents, who may write on subjects, in some respects, more important.

No theory, that I, or any one else, can lay down, would teach a man the art in question : he must be by practice and observation instructed in its principles, though theory may afterwards, when he is instructed in the rudiments, be of service to him : his knowledge may be improved by useful hints, and the experience of others may enable him to avoid many hidden rocks on which they have, to their great loss, struck.

This letter is therefore written for the benefit of such as know already something of the art of making malt, but who yet may be unacquainted with many niceties on which the perfection of the art depends.

Experience, and a constant observation on effects and their causes, have made me master of some pieces of knowledge relative to this subject, which your farming readers may probably think worthy their attention : the result of this experience I shall lay before them.

The first thing I shall mention, with regard to malt, is the benefit of changing the water whilst it is steeping.

Some maltsters think this change of water no ways necessary ; others, on the contrary, approve of it, but do it indiscriminately in the same proportion during the whole season. They are in both respects wrong ; for the times when the water requires to be changed oftenest are at the beginning and latter end of the season, in autumn and spring, when the weather is warm ; for in the middle of the winter the weather is too cold to admit of the water being  
at



at all changed to any advantage. Suppose the barley to be left in steep forty-eight hours in the spring: if the weather is inclinable to be warm, the water may be in that space of time changed three times; in other cases twice may be enough; but the best rule to go by, is that which follows.

Every maltster must know, that in the autumn and spring, if barley is left too long on the steep in the same water, the water will grow slimy, and sometimes sour: now I would advise the master to watch the changes of the water, and when he finds that it is smooth and oily to the touch, and that it is inclinable either to smell or taste sour, let him by all means have it instantly changed; but he must observe, if he regards his interest, a particular method even in doing this.

The usual way of changing the water is, first to draw off that in which the barley was steeping, and afterwards, by pailsful, or by pumping, fill the cistern again.

This I do not approve of, because the barley when the water is drawn off lies closer, and is apt, in a very short space of time, to heat: this is a great damage to the commodity, and, without precaution, a considerable loss ensues. Now my method has always been, first to get a hoghead of water in readiness near the cistern, which I cause to be thrown on the barley the instant the first water is drawn off; and as a hoghead of water is sufficient to wet eight bushels of barley, I add afterwards as many hogheads, save one, as my cistern will wet quarters. By these means I avoid the danger of the barley heating in the cistern.

The consequences of not changing the water whilst the barley is steeping, are often fatal to the malt, which either proves flat and insipid, shewing its qualities in the liquor that is brewed from it; or it acquires a musty disagreeable taste, which the beer fails not to retain.

I have always been of opinion, that, where it can with any degree of convenience be got, river water is best for the purpose of steeping barley intended for malt; but be that as it may, hard spring water is certainly the worst that can be chosen: the maltster will do well to try the several

forts of water near his house with some white hard sope, such as is made at *Nayland*; and that which lathers soonest is most suited to his purpose.

I have already observed, that in the spring and autumn it is necessary to change the water often in which the barley is steeped: it should likewise be remembered, that in these seasons the making of malt, in all its parts, is a very critical business; particularly it is then necessary that the beds, or couches, should be frequently turned, or the malt will not come kindly; but the tap root will be apt to shoot forth vigorously, starving the other roots, and preventing them from accompanying it in its growth: this must be checked, and the remedy is, to turn the couch often, spread it thin, and give it a sufficient quantity of air, at the same time keeping it cool and temperate. This will stop the progress of the first root, give the others time to sprout, and the barley will malt kindly and regularly.

A thin-skinned fine-coated barley is best for making malt, and it is not the worse for not being very full bodied; yet would I by no means recommend a lean, half-starved, unripe grain.

Barley, which has grown on lands highly manured, is not so good for making malt, as that which has been produced by land of a moderate richness without any manure; in fact, a luxuriant soil, whether naturally so, or enriched by art, is not, in general, best for yielding barley for the maltster's use.

For the reasons above mentioned, never chuse to buy barley from the farmers who have large crops, as it is mostly a full-bodied grain they have to sell. I prefer, for malting, a grain which is the produce of a soil that is rather poor than rich, rather light than strong, and more inclined to a gravel than a clay.

This grain is clean-coated, taper, and elegant in its form, is full of flour, almost transparent when watered, and will be sufficiently wetted in forty-eight hours.

This grain encreases in the malting, fills the bushel well, and makes a fine, sweet, wholesome, clean, full-



bodied malt, from which the best of beer may be brewed, either brown or pale, according as the malt has been dried higher or lower.

Now I have mentioned drying of malt, a few cautions on that head may not be amiss.

My practice has been to give my malt as much drying as I could on the floor: this is not only a great saving of fuel to me, but is also attended with several other advantages.

I find that my malt, by being thus gradually divested of its outward moisture, does not shrink so much when it comes to be laid on the kiln; of course it measures to more advantage: it is besides of a better quality, having acquired no foreign taste in drying.

It may very easily be observed, that if malt is laid very damp on the kiln, a thick mist, or smoky vapour, will immediately arise from the surface of it, which, being repelled and condensed by the cold circumambient air, falls again on the malt, where, by the heat from the furnace, it is a second time rarefied, and ascends in clouds of steam.

This alternate rarefaction and condensation of the moisture is of great disservice to the malt, giving it often a disagreeable musty flavour, and making it besides more unfit for keeping.

Now, by my method of suffering the malt to receive a part of its drying on the floor, this inconvenience is, in a great measure, avoided; for the gross moisture is already evaporated before it is laid on the kiln, and that which remains creates no great degree of steam, provided the fire in the furnace is not at first made to burn too fierce.

With this precaution I have often made pale malt as fine as I have any where seen, such as some gentlemen, who long dealt with me frequently, nay, constantly, praised. In drying this malt I took care that there was, during the whole time it was on the kiln, but a very moderate, yet equal, fire in the furnace.

If I had an inclination to have any malt high dried, (for some like brown malt better than pale) when the moisture

was



was nearly evaporated, I caused the fire to be gradually encreased till it roared again in the furnace; taking care that the malt should be properly stirred, lest it proved kiln-burnt; and by this method I had a fine, sweet, brown malt, fit for making harvest beer, such as some farmers are very fond of brewing.

Many are of opinion, that brown malt, used in the same proportion with the pale, will make the strongest beer; but this is certainly a mistake, for I have often made the experiment with great precision, but could never find any material difference, and what difference there was at any time, seemed to me to be rather in favour of the pale than the brown malt: this may easily be accounted for, as the flour in the pale malt always remained sound and uninjured in the drying; whereas the brown malt would sometimes, notwithstanding all the care of the maltster, be injured or parched by the fire, and that part which was parched had, of consequence, lost its spirit and virtue.

I must, however, on this occasion make one necessary remark, which is, that some pale malts are slack dried: these, I own, make a raw unwholesome liquor, which will not keep well; but if the pale malt is gradually and slowly dried by an uniform, gentle heat, it will certainly answer the character I have already given of it, and will, besides, (I have experience for my voucher) keep as well as any brown malt whatever.

Maltsters, in general, are too little nice in the barley they buy. I have already said something on this head, to which I shall add, that I would by no means have them ever bargain for mixed grain: what I mean by mixed grain is barley grown on various soils, and in different fields. There is a sure disappointment in buying such grain, as the kerns will spire at different times, and some of them not at all; so that, after the couch is dried, some part of it will not be half malted, and a great deal of the remainder not malted at all.

In order to avoid this misfortune, for such it is, as the maltster's customers will, with too much reason, find fault



with his commodity, let him by no means attempt to buy tythe barley, for that he is sure is mixed: I experienced myself, many years ago, a great loss by a purchase of the kind. A neighbouring farmer, with whom I was well acquainted, brought a sample of barley to market: I looked at it, and though it was not very fine, I bought it, on account of his letting me have it six-pence a quarter cheaper than I could then buy of others: the lot consisted of one hundred quarters; but when it came home, and I had tried some of it, I think about ten quarters, I was greatly surprised to find the malt so bad, when, examining the barley with great attention, I soon discovered the reason of it. Meeting the farmer, of whom I had bought it, within a day or two afterwards, I asked him how he came to sell me mixed barley; adding, that I always thought he kept his grain with more care separate: he soon unravelled the mystery, by telling me, that it was the parson's barley, not his own, which he sold me.

When I heard this, I was not a little displeased; however, resolving to make the best of a bad bargain, I carried a sample of it to market the next day, and sold it to a hog-feeder for eighteen-pence a quarter less than I gave for it. This was some loss; however, I was glad to get off so well, as I would not have made the whole into malt, and have imposed on my customers, for an hundred pounds.

To shew that I am not self-interested, I will inform your readers of a method by which they may discover whether malt has been made of mixed, or, in part, unripe barley. Take a bowl of water; throw into it a couple of handfuls of the malt; give it a gentle stirring, and the barley which has not been malted will sink to the bottom; the half-malted grains will have one end sunk, being in a vertical position; and the true good malt will swim. This experiment I have often made, and never found it deceive me.

The same barley, though ever so good, will not malt alike well at all times: for instance, take it as soon as it is housed,



housed, it comes well; but whilst it is in its sweat, by no means; yet after it has done sweating, it comes well again.

In the same manner, barley which has been got in early in a very dry season makes but indifferent malt; whereas the same barley, if it is left abroad till rain falls on it to loosen the husk from the kernel, malts very well, and yields a large encrease.

Also, old barley, mixed with that of the last harvest, does not malt well, for the reasons above mentioned; it does not all spear, or put forth its beard, at the same time.

These, I know, are niceties which few maltsters attend to; yet am I certain that an observance of them, and some few more particulars, would encrease their profits nearly ten *per cent*.

It is almost time for me to conclude this long letter; yet must I still trespass on your reader's patience.

A great many maltsters in this county, and in Essex, make prodigious quantities of malt for the London market; and there are often disputes happen, between the maltsters and the factors and buyers at Mark-lane, about the malt not holding out measure; the reason of which many of the country dealers are unacquainted with, and therefore know no other way of guarding against it than by throwing in a bushel or two extraordinary: this is some abridgement of their profits, and is besides often unnecessary. One reason for this deficiency is the avariciousness of the maker, who is willing to have as large an encrease as possible, to the amount of six pecks in eight bushels; whereas, if the malt is intended for the London market, four pecks is all that can, with propriety, be allowed, for it must not be drawn too long; and this malt requires more cleaning by the screen, &c. than that sold in the country.

Malt, if it is not thoroughly cleaned, will heat in the hold of the vessel that carries it; and the tails, being loosened, will fall off; the necessary consequence of which must be a deficiency when it comes to be measured a  
second



second time, at the wharf or warehouse: now, to prevent any altercation or dispute, let the maltster always cause his commodity to be well screened before it is measured into the sacks to be carried on shipboard: he need then put up no more than the measure; he will gain himself a character as a clean good workman; and I will answer for it, that the factors, if he makes his malt according to sample, will readily give him one shilling a quarter more than his neighbours.

I am, GENTLEMEN,

Your most humble servant,

Edge of Suffolk,

And constant reader,

September 10, 1764.

AN HERTFORDSHIREMAN.

## NUMBER LII.

*To the Editors of the MUSEUM RUSTICUM.*

GENTLEMEN,

**A**S one principal intention of your work is to promote improvements in agriculture, you very properly invited a correspondence with your practical readers, in consequence of which, several farmers have been encouraged to appear in it. I have been attentive to their letters, which contain many useful things; but in regard to the main design, am apprehensive they may not have so general an effect as could be wished.

They inform us of their practice in raising great crops, but these are not always the most profitable. A great crop, which cannot, by the same assistance to the land, be repeated, or one equal to it, of some other sort, obtained, may be looked upon as a forced crop; and one such may weaken the land some years: for this reason, an account of one or two great crops is not wholly to be relied on in practice. To form a right judgment of the advantage of such crops, it is necessary to know what were the following ones, till the first come round again in that course of husbandry; and likewise the expence of all these crops: but as these are not given, and indeed seldom to be expected,



it may not be adviseable for a farmer, in another part of the country, to alter his own scheme of husbandry, and adopt a new one, unless he has reasons given him to believe, that, upon the whole, it would be more profitable to him.

The farmers in most counties practise different methods; and they usually attribute their success to such causes as occur in their practice; some, to frequent ploughings; some, to much manure; others, to hoeing: and, in general, to change of crops. But as they usually combine these together, it is not easy for them to discover which are the most effectual, and least expensive; though the knowledge of this would be greatly for their benefit, could it be determined with some degree of certainty.

The experiments made by farmers, for their own private use, are, for the most part, inaccurate; material circumstances are not observed, or forgotten; and, in one respect, they are very defective. To determine which is the best and most profitable way of agriculture, the several methods ought to be tried together in one field, or in land of the same sort, and in the same circumstances. This is seldom or never tried by the farmers; and therefore, though their methods may be good, they cannot be certain that they are the best and cheapest.

Now, in order to determine this great point, and that the farmers themselves may see and be judges of it, by their own practice, I am of opinion, that if your plan was extended, the farmers might be prevailed with to make such experiments as you, or your correspondents, should point out to them, and give you an account of their success: for it is observable, that several of your correspondents are not servilely attached to old customs, but deviate from the common practice of the country, by way of experiment.

These are the persons I would recommend to your particular notice. They might be induced to become experimenters, to the general benefit of themselves and others in their neighbourhood. Such trials may be made, upon their favourite crops, in small pieces of land, without any  
loss



loss to them, and with the common instruments; and when they are satisfied, from experience, which of the different ways is, upon the whole, most for their advantage, more convenient instruments may be recommended to them.

These experiments may be varied, and suited to different circumstances of the land, and plants to be cultivated. Several other persons would probably try them, besides those to whom they are particularly recommended: the neighbouring farmers would be attentive to the progress of them, and make trials themselves, where they saw the other farmers succeed, by whose example they would be more influenced than they commonly are by the experiments made by gentlemen. From small beginnings great effects may, in time, be produced, if any good plan is steadily pursued: and as you may have experiments carrying on under your direction in every county, your *Museum* would become a repository of the most useful and accurate, and, in that respect, be of great service to the public.

What I have said above, relates principally to corn; but the plan may be extended to cultivated grasses, and many other plants; also for introducing more convenient instruments, and many other purposes in husbandry.

If the society for the encouragement of arts would give honorary premiums to those experimenters who most excelled, and pecuniary ones to their servants who executed them, these would greatly excite an emulation; and in some cases the premiums might be proportioned to the quantity of the crops produced.

It may, perhaps, be supposed, that all this would be attended with much trouble, and take up a great deal of your room: but this will be chiefly at first; for after some leading experiments are published, these may be referred to, and adapted to other cases, without very material alterations\*.

In

\* We acknowledge ourselves much obliged to this correspondent for his very sensible hint, which may be improved to great advantage,

In order to explain my meaning more fully, I shall propose an experiment to be tried upon horse-beans, by Mr. Moss, your Kentish correspondent of last month\*; the rather, as he declares himself to be very fond of hoeing-crops, and practises that method upon beans with such care and success. His method appears to be very good, but expensive. Some of the following may be done cheaper, and produce as good a crop of beans, or better prepare the land for the succeeding crop: and they are now proposed to be tried, because this is the season of his preparing the land.

In a field intended for beans, let an acre be marked out, not near a hedge (two acres would be better). This piece to be deep ploughed into two-bout ridges; half of it into three-feet ridges, and the other half into ridges three feet and a half broad. At proper distances of time plough them again twice more; let this be done deep, and still in the same-sized ridges. One third of each of these ridges to be dressed with lime only; another third with lime and foot, when the rest of the field is dressed, and in the same proportion; and the remaining third of these ridges to have no dressing at all.

Upon the middle of each ridge plant a single row of beans, at the same time, and as thick, as the rest of the field; and when they are up about three inches high, the intervals are to be deep hoed with a common swing-plough, which should at the first (and every hoeing from the rows) go as near to them as can be done, without damaging the beans. If any clods happen to fall upon them, they are to be taken off.

The first hoeing is to be from the rows; one interval to be hoed and the next missed, and so throughout the

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piece:

advantage; and we shall readily afford places to such letters as may put the honest farmer in the way of making experiments, the result of which may prove of great benefit to the cause of agriculture in general; and it will give us pleasure to have an opportunity of registering the accounts which may be sent us of experiments made in consequence of these hints. We recommend this letter to the particular attention of Mr. Moss. E. O.

\* See page 144 of this Volume.



piece : for the earth is at no time to be hoed away from the rows on both sides at once. At the second hoeing turn back the earth to the rows, and then hoe those intervals (that were missed at first) from the rows. Thus the intervals are every time to be hoed alternately ; and at the last hoeing, the rows are to remain earthed up on both sides.

The times proper to repeat these hoeings will depend upon the condition of the land, and the growth of the weeds, which should never be suffered to grow high. In general, and after the second hoeing, about a month may be sufficient.

Every hoeing is to be performed at one bout ; but if this does not go deep enough, it may be proper to make his light plough follow the other immediately, by way of a trench-ploughing, especially in ploughing from the rows ; for the success much depends upon the intervals being well and deep hoed ; and this may be done at one bout by a good ploughman.

As there will remain, at each hoeing from the rows, a flip of earth next to them, of about two or three inches broad ; these are to be hoed with a narrow, thin hand-hoe, and the weeds drawn into the furrow, that they may be buried at the next hoe-ploughing, which should immediately follow. This hand-hoeing of these flips to be repeated when the weeds appear.

Five such horse-hoeings are performed at four bouts, which is equal to two common ploughings ; and this may be enough for the rows that were dressed with lime and foot : the others, that have no dressing, may have seven horse-hoeings, in order to see the different effects of each method. These seven hoeings are six bouts, or three common ploughings ; but in such land they may be done with two horses, which will diminish the expence.

Mr. Moss, or whoever else may make the experiment, is desired to see every part of the work done himself ; and that he will keep an exact account of the time when every thing is done, the quantity of manure made use of, and the crops upon each piece ; distinguishing those that  
had

had, and had not, manure; and such as were more or less hoed, &c. and to keep the same account of every thing performed in the rest of the field, and the crop it produces: and when the beans are threshed out, he is requested to send you the particulars from his journal.

If he is inclined to vary the experiment farther, he may allot another piece for that purpose in the same field, to be ploughed into five-foot ridges, and two rows of beans planted upon each ridge, at a foot distance. Here the intervals are all to be hoed every time, and the partitions hand-hoed. In this way as large, or perhaps a larger, crop may be got than in some of the others; but the expence will be greater, and the land not so much improved.

I shall be glad if these hints are, in any respect, useful; and am, GENTLEMEN,

Middlesex, Your very humble servant,  
October 10, 1764.

E. S.

### N U M B E R LIII.

#### *A Method of stabbing Cattle hoven by eating Clover.*

GENTLEMEN,

AS I am a constant reader of your collection, I take notice, in your last for September, of a letter from a gentleman in Ireland, wherein he requests any person, that has tried the experiment of the incision-knife, to relieve cattle that are hoven or swelled with eating clover, to give a particular account of that operation.

I had a yearling steer in that condition about a year and half since: I sent for a farrier as soon as I perceived it; he drenched him, and drove him about for some hours, without giving him any relief: he still grew worse, and the man could do no more for him; and I believe he would have died soon, having almost lost his footing.

I then resolved to try the experiment of giving vent to the wind by an incision.

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I took



I took notice (as the gentleman observes) that he was particularly swelled and puffed out between the ribs and pin-bone on the near side. I gave the farrier a thin incision-knife, not sharp pointed, but a little rounded at the point, and made him cut through the hide about an inch long, downwards, where the swelling was most, (having first properly secured him from moving) about three inches from the rib, and the same from the bones of the loin; then I directed him to make another incision with the utmost caution, that it might only enter the cavity of the belly, without hurting or wounding any of the intestines, as I believed that would be fatal to the creature.

The orifice was not bigger than the top of a little finger would enter, but immediately on making it the wind rushed out, with as much force as if it come from a bellows, and was very foetid; it continued so for some time, and the swelling lessened by degrees.

We afterwards run a needle with thread through the wound in the hide, tied it together, putting a plaister on it to keep the air from it, put him into a warm house, and next day he eat some oats and hay, and in a week's time we healed up the wound and turned him out with the other cattle; and though he did not recover himself in some weeks, he is now as fine a steer as any of his fellows.

I made use of no tube to keep the orifice open\*.

I am, GENTLEMEN,

October 22,

Your most obedient servant,

1764.

A DEVONIAN.

\* We are greatly obliged to this gentleman, and take this first opportunity of publishing his letter, not only because it may be of great utility, but also to convince our readers of the value of our collection, considered in the light of a channel of intelligence in rural and commercial matters, from one part of the kingdom to another.

E. R.

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## NUMBER LIV.

*Two Methods of destroying the Dolphin-Fly which attacks Beans.*

GENTLEMEN,

AS much damage is often done in bean crops by the dolphin fly, any thing, that may tend towards remedying so great an evil, cannot but be acceptable to your readers.

It is generally after a long drought that this black fly proves so very destructive to all sorts of beans: I am apt to think that they are more particularly tempted to attack this crop, by the sap which exudes from the pores of the plant being more suited to their taste than the sap of any other vegetable.

It may possibly be the food designed for them by nature; and this is more probable, as they increase so fast on beans, and are scarcely found elsewhere.

Being in a weak, and perhaps infantine state, when they first attack the beans, it is natural to imagine that they should prey upon the most tender part, and that which is best adapted to give them a supply of sap, or, perhaps, of tender food in a condition to be macerated by their yet-delicate organs: the top therefore of the vegetable is the place where they are first seen; there they begin their ravages, and spread downwards, till they have deprived the farmer of the pleasing hopes he had entertained of having a good crop.

It would be some alleviation of this misfortune, if, when the insect first attacked the crop, the farmer should send into the field one or more men, provided each with a scymeter or hanger: with these they could easily lop off the heads of the beans, by which means a crop has been often saved; for this fly is seldom known to rise again when it once falls with the bean-top to the ground. Another remedy may be applied for this evil; but it is only practicable in small plots, which lie near the home-stall:

the



the remedy I mean is, to turn all the turkeys and poultry into the field; these will devour an amazing number of the insects, and have often been known to save a crop of beans.

I am, GENTLEMEN,

Kent, Sept. 29,

Yours,

1764.

A FARMER.

## NUMBER LV.

### *Method of making Somersetshire Bacon.*

GENTLEMEN,

**P**ERHAPS some of your readers may love bacon; and as we in this town have what is very good, I will let you into the secret in what manner I make it.

Any time betwixt this and Christmas is a good season. I generally salt my pork in large wooden troughs. When I kill a large hog for bacon, I lay the sides in the troughs, and sprinkle them pretty heavily with bay-salt, for I use no other: I then leave them twenty-four hours to drain away the blood, and some of the overabounding juices.

After this, I take them out, wipe them very dry, and throw away the drainings. I then take some fresh bay-salt, and, heating it well in a large frying-pan of iron, I rub my meat till I am quite tired; and this I do for four days, turning it every other day.

If the hog was large, I keep the sides in brine (turning them ten times) for three weeks; after which I take them out, and have them thoroughly well dried in the usual manner: but you must observe, that I have them well dried, or they would not keep so well, nor eat so fine.

I have several times mixed some coarse sugar with my bay-salt, and thought it gave the bacon a mellowed flavour; but then I also conjectured soon afterwards, that the bacon thus cured did not keep so well as the other, but grew rusty sooner; yet I am not sure of this, as it might be owing to some accident. I am,

Brislington, Somersetshire,

Your humble servant,

September 11, 1764.

A FARMER.

## NUMBER LVI.

*An erroneous Method of sowing Peas on a chalky Soil, pointed out, and remedied.*

GENTLEMEN,

**B**EING a young farmer, I do not pretend to have so much knowledge derived from experience as many other of your practical correspondents may be possessed of: they are capable of instructing your readers, by a relation of experiments in husbandry which have come within the compass of their own knowledge or practice; they tell us good methods of farming, and we are glad to reap the benefit.

My father occupied many years a farm in a neighbouring county, part of which was a loamy clay, and the rest a light gravel.

A few years ago, on my marrying a neighbour's daughter, my father took a farm in this county of Bedford, and stocked it for me, being willing to set me going in the world.

The first year I had occasion to sow some hog peas, when I proceeded in the method I had been all my life used to: I sowed them on the rough ground, and harrowed them in; but the dry summer which followed, parched up the pea-roots, and I had scarcely my seed returned me.

Finding I was thus in an error, I endeavoured the next year to remedy it, for I discovered, that on a crumbly chalk (that is the soil of my farm) this was a very bad method. Accordingly, when pea seed-time came, I sowed the land, broad cast, with four bushels of seed on an acre, and afterwards ploughed it in with a foot-plough: this effectually covered the seed, defended it from the ravages of birds and field fowls, and kept it in a proper state of moisture, though the summer was again rather dry.

I find also by experience, that peas in a chalky soil  
are



are best sown with only one ploughing, for the soil is naturally so very loose and crumbly, that if it was turned up to the winter frosts, it would be so reduced, that all the goodness and substance of the land would be washed away, instead of benefiting the succeeding crop.

I send this account to you, gentlemen, that others, perhaps as inexperienced as myself, may be advantaged by my miscarriages: it is an act of charity to place a beacon on a dangerous rock, and this disposition may possibly prompt me to communicate them to you, in case I should chance to experience any losses in future.

In the mean time I should take it as a very particular favour, if some of your practical correspondents would tell me what is the best manure for a chalky soil, for I have not yet been able, in my short experience, to discover any I can entirely depend on.

I should also be much obliged if any body would inform me which of the artificial pastures I ought to cultivate chiefly on such a soil: clover has not succeeded with me, and I am advised that it has not heart enough for either lucerne or burnet.

You perceive, gentlemen, that though I am young and inexperienced, I am willing to learn, and I thought I could not do better than apply to your correspondents to have my doubts solved; and I was particularly induced to do it from the many valuable pieces of knowledge which I have already met with in your work, and by which I have been, I must own, not a little benefited and instructed.

I am, GENTLEMEN,

Your most obedient servant,

And constant reader,

Near Dunstable,  
September 3, 1764.

A BEDFORDSHIRE FARMER.

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# Museum Rusticum, &c.

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For NOVEMBER, 1764.

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VOLUME the THIRD.

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NUMBER LVII.

*The Culture of the Teazel described.*

GENTLEMEN,

**B**EING naturally of a communicative disposition, is the reason of my sometimes filling a few pages in your monthly publication; and I think myself happy in being ignorant of the logical manner of writing, some of the letters in that collection are spun out with; the knowledge they convey being of apparent advantage to very few, if any, of your practical readers; for it should be the care of those who write for the information of others, to communicate somewhat from experience, or ocular demonstration, and not from speculation or hearsay barely: and few, perhaps, would be offended if the editors of this work should suppress some of the letters, which come to their hands, of this nature, more especially when two or three such from the same person appear in one month's publication.

I also think the marginal notes interspersed in the several Numbers were many of them real advantages, as they con-



tained judicious hints of natural philosophy, and extracts from approved modern authors, of which many of the rusticated readers of this work would have remained ignorant; therefore my wish is, that the editors should continue this method.

Having said thus much, by way of introduction to this paper, I shall proceed to give an account of the method how the *dipsacus sativus*, or *fuller's thistle*, commonly called the *teazel*, is cultivated\*.

I am well informed, that the principal place in the kingdom, for the cultivation of this plant, is about Wrington, in Somersetshire, many of the inhabitants of that, and the neighbouring parishes, being chiefly employed therein; and

\* The *Dipsacus sativus*, Dod. Pempt. Cultivated teazel is by Miller called *dipsacus foliis connatis, aristis fructibus recurvis*. It is also called *carduus fullorum*, or *fullonum*. The directions given by the above writer, relative to the culture of this very useful plant, may probably be very acceptable to such of our readers as have not by them the Gardener's Dictionary, which is a large and expensive book. He says that teazel is propagated by sowing the seeds in March, upon a soil that has been well dried: about one peck of this seed will sow an acre (*here he differs from our correspondent*); for the plants should have room to grow, otherwise the heads will not be so large, nor in so great quantity. When the plants are come up, you must hoe them in the same manner as is practised for turneps, cutting down all the weeds, and singling out the plants to about six or eight inches distance: and as the plants advance, and the weeds begin to grow again, you must hoe them a second time, cutting out the plants to a wider distance, for they should be at last left at least a foot asunder; and you should be particularly careful to clear them from weeds, especially the first summer; for when the plants have spread so as to cover the surface of the ground, the weeds will not so readily grow between them. The second year after sowing, the plants will shoot up heads, which will be fit to cut about the beginning of August, at which time they should be cut, and tied up in bunches, setting them in the sun, if the weather be fair; but if not, they must be set in rooms to dry them. The common produce is about one hundred and sixty bundles, or staves, upon an acre, which they sell for about one shilling a staff. Some people sow caraway and other seeds among their teazels; but this is not a good method, for the one spoils the other; nor can you so easily clear them from weeds as when alone. Mr. Miller differs not much from our correspondent, except in the quantity of seed he recommends, as already observed. E.



and from these places the cloth manufactories in the counties of Gloucester, Somerset, and Wilts, are supplied, and even a great many packs carried annually into Yorkshire\*.

The land most suitable for this plant is that of a thin, sweet surface, and marly bottom, though a clay or stone-trash bottom will do, and produce large crops: rich loam, or strong clay, is very improper, as on them the plant is apt to grow luxuriant, and thereby cause the heads to be large and coarse-hooked, and, in a moist summer, subject to mildew and rot before they blossom and are fit to cut†.

As to situation, a southern aspect, on the decline of a hill, is to be preferred, though any other will do; but upland ground is to be most esteemed, more especially in an enclosed country, that the wind may assist in carrying off the natural humidity of the plant in moist seasons, which sometimes, in low and small enclosures, is retained so long as to cause the heads to taint, and become rotten.

Having made choice of a piece of ground, (an old lay is preferable) in February cause it to be ploughed in ridges of three bouts each, at a depth suitable for a crop of beans, taking care that the furrows be laid strait, and as even as may be; the middle of the ridge highest, and a flesh furrow ploughed in the furrow between each ridge; after which let a man go along each ridge, and with a mattock, hoe, or spade, raise earth in small clods, at suitable distances from each other, to produce earth, when meliorated, to heal or cover the seed.

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Having

\* A great deal of teazel is also cultivated in some parts of Essex. E.

† The author of The Complete Body of Husbandry seems to say, that an absolute clay will do for this plant; but we are rather inclined, from some experience in the matter, to join in opinion with our correspondent for the reasons he mentions. It is necessary that the heads should arrive at a certain size in order to their being useful; but if they exceed that size, the hooks become coarse, and they injure the manufacture. E. O.



Having done thus much, let it remain as it is until the time for sowing the seed, which will be about a week or ten days in April\*, as then the earth is generally moistened with rain.

At this time cause a middle-sized harrow to be drawn over the land once or twice in a place, to fill the crevices between each furrow, and level the surface; after which sow the seed broad-cast, in the proportion of two bushels † on an acre; then harrow it in, the same as turnep seed, and let it remain until the plants are come up, and grown into six or eight leaves each; when some person or persons should go over the field with a hoe, and cut out the plants, where they are too thick, to the size of about two feet from each other every way, if the ground be in heart; if it be thin poor land, sixteen or eighteen inches distance is sufficient.

After this they may remain until the latter end of August, when they must be gone over as before, with this difference, the person should have a spade made about four inches broad, and eighteen inches long in the bit, or pan, with a tree in it of three feet six inches long; with

\* The writer mentioned in the last note recommends that the seed of the teazel should be sown in autumn, merely because the wild plant drops its seed at that season; but the practice is not to be defended: his mistake, perhaps, proceeds from his imagining the wild and cultivated teazel to be the same; but this is not the case, for Mr. Miller, on whom we can always in matters of experiment depend, tells us that he has cultivated both sorts for more than thirty years, and never found them alter, so that there is no doubt of their being distinct species. The same writer recommends their being cultivated in the new method of husbandry, planted in double rows, with two-foot partitions, and five-foot intervals; but this we by no means approve of, for the same reason he approves of it, namely, that it would furnish the plants more plentifully with nourishment. See the last note. E. O.

† The writer we have more than once already mentioned, after Mr. Miller, advises a peck only; a great difference indeed; but this also proceeds from the above mistake. He would, without reflecting on the use to which the heads are to be applied, have the plants as luxuriant as possible. E. O.



with this tool the workman must go backward, and turn the whole surface over, about two inches deep, in long spits, turning the spade from the plant, to turn the spit so as no earth may fall into the heart of the plant: but it would be advisable, at the time of first sizing the plants, to leave more than are necessary to stock the ground, to have some to fill up vacancies where any may happen to die, which is often the case during the succeeding winter, and more especially should it prove frosty.

Having done thus much, in this state they are to remain during the winter; only care must be taken that no cattle get into the field, especially sheep, which will eat out the cabbage of the plant, and spoil it.

About the latter end of the succeeding February, the plants should be digged between as in August, being very careful that none of the earth falls into the middle of them; and in May, when the plants begin to shoot into spindle, the ground must be digged over again, with this difference, instead of being laid plain, it must be raised into small hillocks about each plant, to strengthen them in the ground, so that the wind may not blow them down when loaded with heads.

This being done, they are left till the season for cutting, which will be a work of some time, as the heads become fit, which is known by their blowing: it is to be observed that the blossom first appears near the bottom of the head in small, pale, blue flowers; and when these appear to have blown somewhat more than half way up, such head is fit for cutting, which is generally done in this manner; a man has a knife, the blade about two inches long, with a string in the haft to put over the hand, and a pair of strong gloves to defend him against the sharp prickles on the stalks.

Being thus equipped, he must go along each furrow, and cut with one hand, putting them into the other, till he has as many as he can easily gripe; when cutting one which is a little more ripe than the others, and the stem about eighteen inches long, he binds the handful together  
with



with it, (the others are generally cut about nine inches long) which done, the handful is tossed to some open spot, in order to be carried to the place for drying, which is done in the following manner.

Some small poles of ash, willow, or any strait-growing wood, about the size of a hedge-stake, and ten or twelve foot long, must be procured, at the great end of which, about eighteen inches from it, a hole must be made, and a peg put through, to extend three or four inches on each side. The poles thus prepared, the handfuls of teazels must be put on them, by running the small end through the handful, until the pole be filled: in this condition they must be set on one end to dry; but it is to be observed, that they should be carefully carried into a house or shed every night, and brought out at days; and in the house set so as for the poles not to touch each other, lest they taint, which, for want of a free circulation of air, they are very subject to, and more so, if it be close moist weather.

When they are dry, so as to be free from moisture, they may be carried into some upper room, and placed up close together: over a cow-house, or place where cattle are fed in winter, is to be preferred, because their breath is supposed to help to brighten them in colour; wherefore they are the better esteemed, and supposed to be more tough in hook than otherways they would\*.

Having so far described the manner of cultivating this useful plant, shall conclude this paper, lest I exceed my share in the month's publication in which this may chance to be inserted, purposing, on some future occasion, to say something of the manner of sorting, managing, and packing them for market; and also of what crops of corn may be raised with †, as well as succeed them, with the several prices

\* In Essex, after cutting off the teazel heads, and tying them in bunches, or handfuls, they hang these bunches, as they go, on the stiff stalks of the plants, that they may receive all possible benefit, whilst abroad, from the air, wind, and sun. E.

† In Essex they sometimes sow caraway-seeds with teazel. E.



prices of labour attending each operation\* ; and in the mean time, with wishing success to your undertaking, remain,

RURICOLA GLOCESTRIS.  
L.

P. S. I intend in some future papers to say something, the result of experience, on the diseases to which black cattle are subject, and of the manner of stabbing beasts hosed with eating green clover †.

I believe it would be very acceptable to many of your readers to see a letter on the subject of cheese-making, with some practical remedy for hollow or eyey cheese, and as winter is the time of greatest leisure to dairymen and farmers, I could wish some ingenious observing person would give some remarks thereon ‡.

## N U M B E R LVIII.

*On the Advantages of preserving a Rick of Straw for thatching, in Years wherein it is long.*

GENTLEMEN,

**T**HERE is no article produced by a farm but what may be turned to some advantage: I cannot recollect any one thing so trivial, that it might prudently be neglected.

I allow that straw is not the most important article that comes under the notice of the farmer; yet is it surely worth his attention.

It

\* We shall be glad to hear from our correspondent on this subject. E.

† The sooner our good friend sends us the above, the more agreeable it will be to us, as his method may differ from that which we inserted in page 231 of this Volume. E.

‡ We should be obliged to any of our correspondents who would comply with this gentleman's request, as the matter is in itself important, though to some it may appear not worth attention. E. O.



It is well known that most of the barns, stables, out-houses, and even many of the farm-houses, are thatched: for this use great quantities of straw are annually consumed, and the farmer is at certain seasons often at a loss to get straw proper for the occasion. I have myself frequently threshed wheat merely because I wanted straw for thatching, and I suppose many other farmers have done the same.

I occupy, gentlemen, a very considerable farm not many miles from *Devizes*: as I have a lease of the land, it is my business to keep the buildings belonging to it in repair. There being four barns on the estate, besides stables, cart-lodges, cow-houses, &c. I have every year a great deal of thatching to do, and have, as I before observed, often been in great distress for want of straw.

Notwithstanding these frequent wants and inconveniencies, I continued many years (perhaps, in some sort, influenced by the conduct of my neighbours) in the old track; that is, I never knew the value of wheat straw till I was in want of it, and as soon as that want was supplied, I soon forgot it.

At length, however, I was, to my cost, brought to a serious reflection; for some half-score years ago there came, in the month of November, such a furious gust of wind, as to rip off the greatest part of my thatching in one night; the straw of the thatching being dispersed here and there, and entirely spoiled.

This required an immediate remedy: I could not therefore think of waiting till any of my wheat was threshed out, the quantity of straw I had occasion for being so considerable.

I applied to my neighbours, who, occupying smaller farms, and having occasion for money, had threshed out a great deal of their wheat to carry to market: they supplied my wants, it is true; but taking the advantage of my necessity, they made me pay so dear for what straw I had, that I was above thirty pounds out of pocket by this single gust of wind.

Experience

Experience will, they say, make a fool wise : I took the hint, and have ever since guarded against a misfortune of the like nature.

I now constantly every year make a rick of wheat straw, unless it happens to be very short, when I keep my rick two years, instead of making a new one the second year.

This may, and doubtless will, by some of your readers be thought an unnecessary expence ; yet, as I find it answer, I am determined to continue the practice. I not only rick the straw, but I also slightly thatch the rick to keep out the weather ; yet, after all, I save by it.

As I keep a very regular account of my farming expences, I find that in the space of ten years I am a gainer of fifty-three pounds, by saving in this manner a rick of straw for thatching, besides what I saved by not threshing my wheat at an improper season. When I say I am a gainer of so much money in the time, I mean a clear gain : after deducting the expences of making up the rick, thatching it, &c. my expences in thatching for the last ten years have been fifty-three pounds less than they were the ten preceding years ; and this I can easily account for, and will, for the satisfaction of your readers, at least in part, do it.

I now always do my thatching work at the most convenient season, being never in want of straw ; and, for the same reason, as soon as any part of my thatching is deficient, I have it immediately repaired, which is a great saving.

My thatching now lasts longer than it used to do, for I never thatch with short straw, having always, as I observed before, long straw to use ; for in the years when the straw is long, I save the largest rick, which I have sometimes kept two or three years, till the wheat straw has been again long.

In the space of the last ten years I had two accidents happened, which would have proved very expensive to me, if I could not have resorted to my straw rick.

The first was, that one of my sons (a boy about ten years of age at the time) set fire to the thatch of a large



barn, by means of a squib. It burnt furiously for some time, and so far damaged the roof, that I was obliged to have it new thatched; for which purpose I made use of a part of my straw rick, and it was finished in a few days; whereas, if I had not had this rick, I must have bought short straw, for there was scarcely any other to be had, at a large price, and the thatching could not have been finished so soon; by which means I should have had a considerable quantity of barley, that was in the barn, damaged, for it rained very hard, for a considerable time, in a few days after the thatch was repaired.

The other accident was of the same nature with that mentioned in the beginning of this letter; I mean, I had a good deal of thatch stripped by wind; but it was soon repaired, without any damage to the corn that was in the barns at the time.

All this, perhaps, will not be enough to persuade your practical readers to rick their long straw. If this is the case, they must even continue their old practices: yet I hope I may be permitted to say one thing, which I know to be true; what I mean is this, that farmers, if they would attend to matters which they generally think beneath their consideration, would get more money than they do: profits arise from what appear to be trifles at first sight, and the merest trifle should be by a farmer attended to.

A habit of industry, frugality, oeconomy, and perseverance, is absolutely necessary to the occupier of land, if he does not mean soon to shift his quarters.

I am, GENTLEMEN,

Your reader,

And very humble servant,

A WILTSHIRE FARMER.

## NUMBER LIX.

*Account of a Meadow trench-ploughed to Advantage.*

GENTLEMEN,

**I**T is not my design to make any parade of learning in this my address to you; I wish to be understood by the honest farmer, for whose use I chiefly write at present.

I have, gentlemen, a moderate estate in a vale country, which I occupy myself. I need not acquaint your readers with the nature of vale lands in general; such of them as are intelligent, cannot but know that they are stiffish, deep, and rich.

A few years ago I had a meadow, which did not yield me so large a profit as I had reason to expect: it was a good blackish loam, rather stiff than light; but by the mismanagement of a former occupier, it was stocked with grasses of various kinds: some of them ripened their seeds early in the spring, others late in the summer, so that I never could get all the grass in a proper state of maturity at any one time to cut for hay.

This induced me to think of ploughing up my meadow, and converting it, at least for a course or two, into arable land.

It was some time before I could determine what grain first to sow it with, balancing long in favour of oats, which will yield a large crop, with little expence, on land newly broke up; but as I intended my second crop to be wheat, I did not chuse to sow oats first, as they are great drawers of land, and the soil of my meadow, though in very good heart, did not want to be impoverished.

Whilst I was hesitating what to do, a friend from Bucks came to pay me a visit, and when he heard my doubts, advised me to trench-plough it, and afterwards sow it, first with barley, and then with wheat on the barley stubble. Approving of what he said, I followed



his advice; and in the beginning of the month of March I sent in a foot-plough with a broad share, and another foot-plough with a common share.

I had the land ploughed in the following manner.

My intention was to plough it in broad lands. The ploughman who held the first-mentioned plough, went first into the field, and drew a strait furrow, turning up a thin turf: when he had finished his bout, forming a low ridge, the other man, with the other plough, went in the same furrows, and turned the earth to a considerable depth over the turf. In this manner they ploughed round the ridge till a broad land was formed, about ten paces wide; the second plough always following the first, in the same furrow.

After this method was the whole field turned over. I then let it lie about four days to sweeten the soil; at the end of which time I sowed barley, broad-cast, and harrowed it in.

As soon as the blade appeared above the surface of the ground, I passed a roller over the field, to close the earth about the roots of the plants, and lay the land smooth for the scythe.

By this husbandry I procured a very large crop of barley; how much I cannot exactly say, as I kept no account; but, just before it was mowed, I remember several judicious farmers estimated it at above fifty bushels the acre; and so much, at least, I really believe I had when it was all threshed.

My large crop of barley was not, however, the only advantage I procured by my experiment, for the turf was so thoroughly rotted by harvest, that in the first week in October I sowed it with wheat on one ploughing, and harrowed it in.

I used only ten pecks of seed on each acre, yet, at the harvest following, had a return of, at least, forty bushels *per* acre.

When I sowed the same field with barley for a first crop, as already mentioned, I allowed twelve pecks of seed to each acre, and no more.

Where

Where the depth of the soil will admit of it, I approve much of trench-ploughing, as it raises a new mould, that has not, perhaps, ever afforded nourishment to annual plants, and therefore cannot be impoverished.

I am, GENTLEMEN,

Your humble servant,

West of London, A PRACTICAL FARMER.  
September 28, 1764.

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## N U M B E R L X.

*Some Account of the new Method of cultivating Lucerne by Transplantation.*

GENTLEMEN,

I Took the liberty, some time since, of sending you, for insertion in the *Museum Rusticum*, an extract from Mr. Randall's Semi-Virgilian Husbandry, respecting the culture of cabbages at large in the field for feeding cattle; and, if I remember right, my principal reason for desiring you to give it a place was, that Mr. Randall's work, being full of philosophical reasonings, would not probably fall into the hands of common practical farmers, who, being deterred from reading it on the above account, must thereby be deprived of the opportunity of benefiting themselves by the several useful experiments he has made in agriculture, many of which are recorded in the Semi-Virgilian Husbandry.

Since that time, another work, called *Essays on Husbandry*, has fallen into my hands, and I have read it with some pleasure; yet am I sorry to see that the author, who is a man of sense, knowledge, and experience, has fallen into an error nearly of the same nature with that committed by Mr. Randall; for he is so very learned, in ancient and modern languages I mean, that, I think, I may safely conclude there is not a farmer in the dominions of Great-Britain who could understand his work.



This is the more astonishing, as these Essays were written professedly for the service of that very set of men who can never understand them.

To a man of education they are truly instructive and entertaining, provided he has a taste for agriculture; and, I own, I was myself particularly pleased in reading the first Essay, with the author's account of the origin, infancy, progress, and improved state of agriculture: he tells us how far it is, or is not, encouraged and countenanced in the several states of Europe. He seems to have travelled a great deal; and what is much to be commended, he has made such observations as have enabled him to do his country service, by writing in praise of agriculture, which good men, in all ages, have ever held in high esteem.

However, the principal end aimed at in this publication is, to recommend a newly-discovered method of cultivating lucerne.

Mr. Rocque, as may be seen in several parts of your work, has adopted the old Roman method of sowing it, broad-cast, and harrowing the land from time to time by way of destroying the weeds. Mr. Miller, I think, recommends the new, or drill, husbandry for the culture of lucerne; but the author of the Essays above mentioned differs from both these practical cultivators, and raises his lucerne in a nursery; after which he removes the young plants, and having cut off their stalks and tap roots, transplants them, with great regularity, into the field where they are to stand for a crop.

I shall not pretend to decide which is the best method; yet I may venture to say, that I know it may be raised to considerable profit, both in Mr. Rocque's way, and according to the rules laid down in the new, or horse-hoeing, husbandry.

I have no doubt but it may succeed by transplantation; yet I greatly fear that the expences in this method will, when applied to any considerable extent of land, greatly exceed the worth of the crop.

I have

I have observed above, that these Essays are too learned for the honest farmer's reading: it is therefore very improbable they should ever fall into his hands; yet, as it is a great pity he should not be permitted to judge for himself in a matter which may turn out so much to his advantage, I have taken the trouble of transcribing a few pages of the second Essay, which more immediately treats of the culture of lucerne by this new method of transplanting.

I have in this extract omitted all reasonings that might render the narration obscure to the farmer; not that I had myself any objection to them, or did not approve of them, but as I was willing the honest cultivator should have as much of this matter laid before his view, in a plain manner, as was necessary for him to understand it: when this is done he may judge for himself; and if on trial he finds the method here recommended answer, his best way will be to adopt it in his future practice.

“Whoever proposes to sow a lucerne-nursery, or engages in any larger undertaking of cultivating whole fields of sainfoin, trefoil, buck-wheat, spurrey, fenugreek, sweet melilot, &c. would be noways ill-advised, if he prepared a bit of ground, and sowed a spoonful of the seeds about a fortnight before he proposed to sow his larger quantity; since, from the good or bad success of this little attempt, he may be enabled to judge, whether the seedsman has supplied him with seeds fit for vegetation.—Without such precaution, a whole year may be lost; which is a mortifying circumstance in matters of husbandry.

In the end of March, 1757, a common day-labourer was ordered to sow a pound and a half of lucerne-seed\*, and

\* In hot countries, like Spain, Italy, &c. the husbandman usually sows lucerne, and covers the seeds with a *traina* (a practice superior to our bush-harrowing) about an hour before sunset. Then the dews fall and moisten the ground; whereas the seeds are shrivelled and parched in the heat of the day, insomuch that they cannot expand themselves but with difficulty.

See LIEBAULT, *Maison Rustique*, 4to. 1617, L. v. p. 527.



and keep the ground clear from weeds. The seed was sown on one of the least promising pieces of land in all the neighbourhood; but this was done by express order; for it was thought unfair to make the experiment on a better soil than the commonest sort of grass-fields. The spot of earth set apart for the purposes, both of nursery and transplantation, was, in former times, a kitchen-garden: but the good soil, to the depth of eighteen inches, had been removed for the sake of manuring a corn-field. [To which we shall just add, that the attempt was made in an hilly country, where the *staple* earth is naturally shallow.] What remained was a cold, yellow, clammy *stratum*, which the country-people looked upon as mere clay; but, its nature having since been better examined, it appears to be a mixture of imperfect clay, and imperfect marle.—No manure worth mentioning was used upon it, as will appear by the sequel.

To all seeming appearance, little, or next to nothing, could be expected from a piece of ground of such an unpromising cast; but, upon the whole, the experiment proved successful and easy.

By the middle of August, the plants were, some of them, eighteen inches high; and many of them branched out, subdivided themselves, and made very fine side-shoots: upon which it was resolved to venture upon the second part of the experiment, according to the accounts given by M. de Chateauvieux; therefore taking the advantage of a moist season, in the beginning of September, (which season, by the way, did not last long) we performed the work in the following manner:— [But here let it be just observed, in passing along, that the time of the year, pitched upon for transplanting, was, at least, *three* weeks too late for England, though, perhaps, highly proper for the territory of Geneva, or the southern parts of France.

This

I thought proper to insert this note, but apprehend it is of no great consequence in our climate. Thus much, however, it seems to imply; namely, that it is never right (even in our country) to sow lucerne during a great drowth, and especially when the winds are dry and harsh.

This therefore is set down as one of the *mutatis mutandis* so indispensibly necessary in matters of agriculture, when the practice of one country is copied in another.

First the roots were dug up carefully; orders being given before-hand not to attempt drawing them, even with the smallest degree of violence, till the earth was entirely loosened at top and at bottom. In the next place, the long tap-roots were cut off eight, nine, or ten inches, discretionally, below the crown of the plant (the scissars being generally applied just beneath the forks of the root, if it be a branching root): then the stalks were clipped about five inches above the crown of the plant; and the remaining plant, after these amputations, (which may appear, at first sight, to be very bold ones) was thrown into a large vessel of water which stood by for that purpose, in the shade. Such refreshment is no ways unnecessary; for this plant is very impatient of heat and sunshine after it is taken up; nay, to such a degree, (at least the first half-year of its growth) that one may almost call it a sensitive plant.—The same day, making use of a dibble, or setting-stick, and filling every hole with water before the roots are put in, we transplanted them in rows, two feet asunder, and each plant six inches apart in the rows; having first made little drills, or channels, and sprinkled, or half filled, them with sea-sand and wood-ashes kept dry (two parts of the former to one of the latter); which was done with a view of loosening the soil, and giving a little warmth to a piece of ground which was naturally cold and clayey; nor was any other manure used. The drills were afterwards once watered, to take off the dryness and heat of the ashes. The roots were placed firmly in the ground, and two inches of the stalks covered with mold.

Yet here it must be freely acknowledged, that the hopes of possessing a large crop occasioned *one* mistake, which we chuse rather to mention than suppress, as many people may happen to entertain the same false expectancies. The *mistake* was, that we made our rows two feet asunder, which was over-narrow; and placed the plants, in the



lines, only six inches apart, which brought them nearer together than they ought to have stood\*, even though the ground was very poor: nor did we foresee, that horse-hoe ploughing is five times more efficacious, as well as cheaper, than hand-hoeings.

Therefore, after frequent experiments, since made, it appears best to make the lines *three feet four inches* distant from each other: and, if the soil is good, it may not be amiss to allow each plant *a foot* distance one from another in the lines, for thus the hand-hoers will work more commodiously, and a little hoe-plough may be guided safely up and down the intervals, which will save a great deal of trouble: nor will the future crops be lessened, by such thin transplanting, half so much as may be imagined; but, on the contrary, the plants will be larger, more juicy, and better tasted; which circumstance may be extended in favour of the *new husbandry* in general. Space and culture improve the herbage and seeds of plants; in proof whereof I have been assured, from good authority, that all the corn, raised by M. de Chateauvieux, sells at an advanced price; being larger, brighter, and healthier than common corn, and, consequently, more fit for sowing, or making bread.

But, by way of confirming the necessity of allowing lucerne-roots a good share of space, a friend of the author's filled an acre with plants, according to the *first* directions; but, the soil proving extremely good, and free from weeds, it soon appeared that the roots stood too close: in consequence whereof, every other plant was taken up the next autumn, and, a fresh acre of land being properly prepared to receive them, he thus gained a new plantation of lucerne, at a small expence, with little trouble: and, what is more remarkable, it is thought the *second* acre bore a larger quantity of herbage than the *first* would have done, if the plants had continued as they were, without being thinned, to the amount of  
one

\* This acre contained about twenty-six thousand roots.

one half\*.—Of course, there is reason to conclude, that this slight hint, which took its rise from mere accident, ought not to be looked upon as quite unuseful, since two acres may be raised with almost the same expence as a single acre†.

In ten days, though a drowth succeeded, some transplanted plants made shoots of three inches height; which vigorous growth gave better hopes than had been conceived at first.

It was also some encouragement to the undertaker, that he found *wild* lucerne ‡ within two musquet-shots of the place where the nursery was formed. These plants were certainly *aborigines*; for they grew in a part of the kingdom where the name of lucerne had rarely been heard of, except by gentlemen. Besides, no person curious in husbandry would have ventured sowing the seeds in such an unpromising piece of ground; for the field, where the wild lucerne grew, was a sort of coarse, uncultivated morass, and valued only at about two shillings and sixpence an acre.

Yet still the approach of winter made many persons doubtful concerning the success of this new plantation; nevertheless, it was some satisfaction to recollect, that there is less harsh, severe cold in England (and that almost by one third) than in the territory of Geneva, where the original experiment was made, and where the plant we are speaking of has been known to thrive so extremely well.

L 1 2

At

\* I have lately been informed, that M. Eyma was once forced, by the same necessity, to take up every other row in the year 1757.

† In a deep soil, the roots of drilled lucerne, *untransplanted*, may stand nearer than the roots of lucerne *transplanted*; as the former make not such large lateral shoots, and procure sustenance at a greater depth. This I observed, last year, in a patch of lucerne, raised at Winchester, in very rich ground.

‡ This was the species of lucerne called *medica palustris*, or *meadow lucerne*. St. Liger, and other husbandry-writers, suppose (erroneously, as I imagine) that the red honey-suckle, perennial clover, in dry, sweet, upland pasturages, is a wild degenerated lucerne.



At length the winter passed over, and, out of four thousand roots, only thirty or forty perished, whether by frosts, immoderate rains, or any other accident, is hard to say: but the labourer filled up all the vacant spaces from the nursery in about an hour, and in April, 1758, most of the plants were nearly equal in size and strength; of a deep juicy verdure, with few or no discoloured sickly leaves: but, May the eighth, people counted sixty stems from one particular root, and the stalks and leaves of some chosen plants weighed near half a pound at one cutting. Yet we learn, by experience, that lucerne must only be considered as in a progressive state, till the *third* summer after transplanting; and then M. du Hamel assures us, that one flourishing plant will produce *a pound* of well-dried hay; which is saying a great deal, and much more than I could ever verify; for, if a single plant produces *one pound of hay*, it must have weighed *four pounds* when it was *green*. Yet I have received an account from an eminent physician in our own country, (who planted two acres of lucerne by my directions) that many of his plants, in the second year, yielded near half a pound of hay each plant.

As an acre of lucerne, thus managed, will contain more roots than one is apt to imagine at first guess, how great must the produce be of four or five cuttings every year, and those confessedly the most nourishing and palatable food that cattle can eat! For thus much is certain, amongst other advantages, that, if a field be industriously hoed, ploughed in the intervals or spaces, and hand-weeded in the rows, for the first two or three years, it is almost sure, that horses, cows, or sheep, will hardly find a single weed in a large quantity of green food.

We will now mention the state of our transplanted lucerne in its second year, namely, 1758.

And here let it be remembered, that what cultivators call a proper time for cutting is, when the plants are about fifteen or sixteen inches high, at an average, throughout the field: but this must be understood in a  
relative

relative sense, for some plants will be two or three feet high, and others may not be above ten inches, or one foot, in height, according to the circumstances of health, space, situation, &c. of the several roots.

The cuttings of the year 1758 were as follow: May 8th, June 7th, July 12th, August 20th, and October 1st.

In the year 1759, it was cut five times, and six times \* in 1760; which made sixteen cuttings in three years. Nay, by the ninth of April, in 1760, some of the lucerne plants were near seventeen inches high, at a time when no field in the neighbourhood had grass of four inches height, though you took five or six acres together. The same lucerne was cut twice, before any hay-making began in the country round it, if we except some few meadows lying near market-towns.

Having carried on my first experiment thus far, upon almost as unpromising a piece of land as could be found, and being sensible I had made some mistakes from want of experience, (having as yet never seen any transplanted lucerne in England) I gave directions for making a small plantation in Berkshire, but still took care to chuse a field that could hardly be called middling land. It was overrun with coarse weeds, had been long out of tillage, and the earth, in most places, was hardly four inches above a bed of chalk; *which* (let farmers say what they please of it, in respect to faintfoin †) is no ways favourable to the growth of lucerne, especially if the latter be *transplanted*; for the chalk flakes, when thaws and rains come on; and it either heaves the plants out of the ground, or exposes the fibres of the roots too much to the cold. Yet upon this I ventured with my eyes open; for Pliny (whose authority I scruple not to take, when I have no other) had given me a caution concerning lucerne raised upon chalky lands: but what induced me to make the attempt was, that the goodness of the soil might not lead me to say  
more

\* The *sixth* cutting, if it be after the first week in October, is little more than nominal.

† Lucerne and faintfoin require the same soil and the same culture; no two plants being more alike in every respect.



more concerning the success of an experiment, than other people may hope to find.

The little field, or close, consisted of one rood of ground, or a quarter of an acre; which we threw into fifty-four rows, each row containing one hundred and ten plants, or five thousand nine hundred and forty in the whole. In the second year after transplanting, (and lucerne is not then arrived to its due size) and at the first annual cutting, (which is not the best cutting, as the herbage suffers much from the winter) I weighed, out of curiosity, a parcel of the prime plants, which, one with another, weighed about one pound and a quarter each. But supposing that every plant weighed only one quarter of a pound, and admitting we give up the sixth cutting, (which is more than one needs to do) then the crop of forty perches, or one fourth of an acre, amounts to a very considerable return of ten tuns, at least, of green lucerne *per* acre.

An acre of transplanted lucerne, rightly managed, will bring in five pounds a year, free and clear from all expences, and that for a considerable tract of time. Now certainly this advantage deserves well to be considered; for the husbandman is said to be a good manager who makes three rents each year; a first for the landlord, a second for labour, &c. and a third for himself: but an acre of lucerne will for several years produce *five* rents, clear of all out-goings for rates, rent, workmen, manure, &c. supposing the land to let at fifteen shillings an acre, as usually happens in most estates that lie at some distance from cities and market towns. On the contrary, if land be dearer near rich populous places, the ground will be better, and the produce more advantageous. This gives lucerne its value near towns and cities, where two or three acres may be rented, but ten or twenty cannot; and sure it is some advantage in husbandry to make one acre supply the place of two or three, and especially where it is difficult to rent land, even at a very high price.

It is certain, that the profits arising from transplanted lucerne have been no ways exaggerated in my account;

for by some collateral observations it may be easy to carry the value of an acre something higher than has been here represented. Suppose *green vetches* (which are rarely cut more than once) and *green lucerne* to be of equal value as food for horses (which is making a supposition no good writer on husbandry will allow to the disadvantage of lucerne); now a perch of green vetches (if the crop be good) sells for six-pence at seventy miles distance from London, and a perch of transplanted lucerne will weigh as much, or very nearly as much, at two cuttings, out of the four or five annual cuttings; which (every circumstance being duly considered) brings an acre of lucerne (to say the least of its advantages in husbandry) to be of equal value with two acres and a half of vetches; not to mention that lucerne is a perennial plant, and vetches are annual; which, upon the whole, makes a new difference in point of profit\*.

As I think it unfair to suppress any unsuccessful circumstances in matters of husbandry, I will here ingenuously confess, that the most material of my mistakes were these:—I followed my foreign instructions (which, at that time, were but few) with too much diffidence, and in too literal a manner.—I was not enabled, through want of experience, to adapt the husbandry practices of other nations to the English climate.—I transplanted too late, filled my rows too full, and allowed not sufficient space for the intervals.—By following the French directions over-closely, I cut the tap-roots too short in the best plants, and knew not (as it is a point unmentioned by any cultivator of lucerne) how to manage a root that was very small.—The means of avoiding and rectifying all which mistakes and difficulties are, by the help of subsequent experience, carefully pointed out.

And here it may be worth considering how to apply a field of lucerne, carefully and industriously cultivated, to the greatest advantage.—In such a case, let us suppose the plantation to consist of two acres, and that four large  
horses

\* See Vol. I. page 298, of our Collection, where mention is made of Mr. Recque's profit by lucerne. E.



horses are to be supplied with green fodder, from the end of April till Michaelmas. Now, in order to manage this affair with dexterity, count the number of rows or lines in the lucerne-field, and place in one of the head-lands thirty land-marks, at equal distances; and thus, having cut a proper portion, day by day, you will be ready to begin a-fresh, after the last cutting.

When I say *you will be ready to begin afresh at the end of thirty days*, I must desire to be understood, with a small degree of latitude: for *physical* accidents are so numerous and unavoidable in regard to the growth of plants, (though lucerne is liable to fewer checks and miscarriages than most other cultivated field-vegetables) yet still the nature of the thing will not allow us to predict the time of each and every periodical cutting with much certainty;—nevertheless, thus much may be depended upon, even for some years successively, that, after the first annual cutting, our directions, here given, will be attended with no inconvenience to the owner; for there will rarely be more than three or four days difference between the times of the *second*, *third*, and *fourth* cuttings:—nor will the want of lucerne-fodder, during such short intervals, be of the least ill consequence; for, surely, that husbandman must be a very improvident manager who has not other grass-fields by way of a momentary supply.

The times, therefore, of the *second*, *third*, and *fourth* annual cuttings, are tolerably certain; but the *first* cutting, according to the nature of the winter, may be accelerated, or retarded, a fortnight, three weeks, and, perhaps, a month.

The time of the *fifth* cutting is also, in some degree, variable and uncertain, as the solar heat decreases, and the days grow shorter. A *sixth* cutting, which is seldom of much consequence, chiefly depends on a fortunate season, in conjunction with the industrious good management of the cultivator.

From this succession of fresh green food appears one singular advantage in raising lucerne: and, in the next place, care must be taken, that your plantation be always proportionable to your number of cattle; or, in other words,

words, let it be a rule to you to have rather over-much lucerne, than too little; for then one cutting may be set apart for hay, which may be given occasionally to favourite horses and sick cattle. But, in case no hay is made, the owner of the ground, even then, by means of the supplies he derives from greer lucerne, will be enabled to spare a large quantity of other grafs for hay-making; and thus two acres of lucerne will give him the power of saving two or three tuns of hay more than he could have saved otherwise; consequently lucerne, *in effect*, helps to keep cattle both in winter and summer.

By such sort of husbandry, and provident management, the stock of hay for winter will be considerably encreased, and the owner enabled, for the space of five months at least in the other parts of the year, to allow his horses very nearly the same quantities of green food each day; all equally fresh, wholesome, and well tasted: which single circumstance (if it related to horses only) gives lucerne the preference over all other sorts of green fodder hitherto known, and in process of time may be applied (as has been experienced with much success) to the fatting of horned cattle, provided such cautions are used as shall be specified hereafter, and which ought always to be remembered.—Now whatever encreases the number of cattle, augments the quantity of dung necessary for carrying on the more successful cultivation of arable lands; and *whatever*, by multiplying the number of cattle, affords more animal food to man, will of course contribute towards lessening the price of meat, which will assist society in general, and more particularly the manufacturer and peasant; for the grand secret of well-managing a trading populous country is to supply the inhabitants with flesh and corn upon easy terms; for then mankind will multiply of course (supposing the government to be mild and equal); nor will other nations undersell us in the commodities we export to foreign markets.

Now lucerne, in matters of husbandry, comes the nearest, of any article yet known, towards attaining the points here proposed; forasmuch as one acre of land, thus



cultivated, will support as many cattle in spring, summer, and a part of autumn, as four acres of common, natural, up-land grafs did before. But this use of lucerne is still greater, if land be scarce; or if the nation be populous, and the soil has been cultivated to the extent of the *old* husbandry: for then the introducing this plant is, in effect, the same as creating new land, if the superior produce of lucerne, both in quantity and quality, be fairly considered by us.

Yet one thing must be well understood in the new practice of raising lucerne. Negligent husbandmen, and such as expect good crops without labour, expence, frequent ploughings, weedings, &c. would act a *wise* part in not attempting to cultivate the plant here mentioned: nor is it adviseable for gentlemen of fortune to commit this part of husbandry to bailiffs and servants, who (be their masters advantage ever so great) will not like the labour (though they are well paid for it) of turning fields into a sort of gardens, and, besides all this, may conceive a prejudice against improvements, and take some small delight to see them miscarry: so that all random, careless, and insincere methods of culture must have nothing to do with raising plants, which, though hardy and long-lived after they attain a certain age, yet are surprisngly delicate and tender when they are young, or when first transplanted; and more especially if wild couch-grass and other weeds should spring up amongst them.

For these reasons, at first setting out, I must advise every good cultivator to be particularly industrious in the extirpation of weeds, and that he over-burdens not the strength of the earth from a principle of avarice, but allows her the just refreshments of manures, and gives her at least some breathing-space of ease and repose.

It is highly unreasonable to expect success in the management of this plant *without care*, and highly improbable (if the seeds are good) to miscarry *with due care*. It is true, many people have failed in the process of this experiment; but then one is generally enabled to point out the error, as likewise the cause of ill success, with tolerable

tolerable exactness. To begin well in cultivating this plant is doing but little; rules and directions must be cautiously observed for three, or two years at least. Few people make mistakes in the beginning of an experiment: but, generally speaking, after three or four months are expired, the master's attention and keenness wear off, and the bailiff or gardener (as sometimes the raising of a lucerne-nursery falls in the province of the latter) are extremely glad not to refresh his memory: for the *one* does not like an additional trouble out of his department (a punctilio which has great weight with all servants); and it is a maxim with the *other*, never to admit any thing new in matters of husbandry, but admire those sorts of crops which Columella describes; crops that can hold up their heads and prosper under all the negligence of a pretending cultivator.

It is true, many difficulties and discouragements attend making experiments. The continuance of life is as short as that of art is permanent;---and few husbandry experiments can be made oftener than once in a year:---nor must we reason too much by analogy, from success in one production, to success in another of a different species.---Attention also is required, and that even to the minutest circumstances:---and again, too many experiments die with the observer; which, though highly useful, did not appear considerable enough for human vanity to establish a system thereon.

Yet still all these difficulties and discouragements may be counter-balanced by the advantages which result afterwards to society.

Lucerne cannot easily be freed from manifest disadvantages by any other method of culture than what is here recommended. That it has usually miscarried, when sown with spring-corn, after repeated trials in this kingdom, from the year 1577 to 1764, is well known to many readers; for common wild grass, and particularly couch-grass, may be called its destruction, if not its poison, principally indeed by starving the roots of it, but probably from its *effluvia* too. This likewise I have always ob-



served in plants of a different species that stand too near each other; they immediately, as it were by a declaration of war, contend for mastery: their roots are constantly attempting depredations and encroachments upon each other; whilst the stalks, especially those of weeds, make the same efforts in longitudinal shoots; and *that* plant, which over-tops the other, provided the shoots are equally thick and strong, always gains the victory, and, by over-shading and dripping upon its antagonist, forces it to dwindle away and perish. This struggling for life and mastery draws up the plants too weak and spindling, and the conquered plant usually dies. Now weeds, generally speaking, are more hardy, savage, and hungry, than manured vegetables. If such be the case, where is there a country to be found that abounds with foul grass and weeds more than England? So that, if lucerne be sown in the usual way amongst corn, like ray-grass, clover, and hop-trefoil, no care can keep an acre clean. It may last two years, (only one crop being tolerable) and then must perish in the common course of nature. A gentleman very lately made this experiment (in good measure against his judgment) for the sake of farmers, in hopes of finding out a cheap, easy, and compendious method of raising lucerne; but the crop, at the end of fifteen months, was as near being overpowered and starved as can be imagined; which made him venture to take up and transplant the few good roots that remained, which, being freed from the bad neighbourhood and incumbrance of coarse grass and other weeds, appeared to prosper very well. Again, if lucerne be raised in drills, according to the best directions hitherto given by our ingenious countrymen, Tull and Miller, (who, to do them justice, were the first persons, amongst *our* modern writers, that saw the great advantage of this grass, and pressed the culture of it strongly on the English nation) certain it is, that such a method will greatly exceed the promiscuous sowing of lucerne with spring-corn. Yet still, in the practice of drilling, a considerable part of the seeds may be faulty, and then the rows will appear naked and unsupplied with herbage: nor can



the hopper be supposed always to drop the little grains at precise distances plant from plant. Nevertheless, such persons as prefer drilling may fill up all the vacant spaces with transplanted roots.

In the method of cultivating lucerne, which is here recommended, an acre will be found to contain about such a number of chosen healthy roots as the ground is capable of supporting, and admit a greater number of them than the reader will be apt to imagine, *prima facie*; for it will hold; according to my first experiment, about twenty-six thousand plants: but, if the ground be clean, rich, and well conditioned, it may be more adviseable to observe the greater distances already mentioned; upon which principle, the acre will contain about thirteen thousand plants; and this is the number, all things considered, I am most inclined to recommend; for the produce of such an acre will be full as large and profitable as the *former*, and the ground will be managed with less expence and more convenience.

It may be observed farther, that, in transplanting lucerne, there will be one advantage (and that no small one) which can never be obtained in drilling, or promiscuous sowing; each root will stand at a proper distance from its neighbour, and receive its allowance of food in due quantity, without diminution. — In the next place, you will seldom see a plant wanting, and rarely (except by mistake) a plant supernumerary: but, if a few sets should chance to die, it will be easy to supply the vacant spaces from the nursery, and that, as people find by experience, in any moist day, from April till the middle of September.

There is another advantage which arises from transplanting lucerne; for, by cutting the tap-root\*, you prevent its

\* It was a received opinion, amongst our ancestors, from time immemorial, that the amputation of a tap-root, in tree or plant, was dangerous, if not fatal; but Gabriel Plattes, about one hundred and fifty years ago, seems to be the first who had experienced,



its penetrating ten or twelve feet perpendicular into the ground, which the plant naturally does in three or four years, except it be obstructed by a *stratum* of rock, or chilled at root by weeping springs, or finds admission in a bed of cold watery clay. Then the crop makes a poor appearance, or, perhaps, goes off all at once.

People who hand-hoe or horse-hoe lucerne, need not give themselves much pain about breaking or cutting off a lateral root accidentally; not but that some care and caution must always be used: however, what seems to injure the parent-plant proves, in the end, no-ways disadvantageous to it; for horizontal, or side-roots, thus cut, or broken, push forth new roots and filaments laterally; and thus the suckers, or tubes that suck nourishment, are multiplied by a cause which had the appearance of lessening their number. Yet *transplanted* lucerne will no-ways bear such rude treatment as the antients sometimes gave to *untransplanted* lucerne, when they thought fit to make it undergo the discipline of harrowing.

How long lucerne may last cannot be known by the experiments which are here related, namely, from the spring of 1757 to the beginning of the year 1764; but some persons of credit have observed the plants to continue in good strength and health near twenty years. [I suppose they mean here and there particular plants, and not a whole plantation.] Tull, indeed, tells us that, except lucerne be choaked or starved by grass and weeds, he hardly knew when to say it will die a natural death; and probably it may not prove the *less long-lived* for being *transplanted*; since hand-hoeings, horse-hoeings, and digging, will give new strength and health to the plants. The spreading of the roots will be facilitated by loosening the soil, and letting in the good influences of the atmosphere:—their growth also will be augmented by giving them  
that

perienced, that such an operation might be performed, not only with safety, but successfully.

*Pract. Husb. improved, or a Discovery of infinite Treasure*, 4to, 1656, p. 15.

that additional nourishment of which the weeds defrauded them:—and, in the last place, all manures will more easily reach them; for thus much is a certain fact in husbandry, that, when the ground is rendered clean, light, and penetrable, the roots love to expand themselves, in order to procure a greater quantity of nourishment.

I fairly acknowledge that I am not enabled, from my own experience, to fix the common duration of lucerne, whether transplanted or drilled (and that from no difficulty in the thing itself, but because a sufficient number of years has not elapsed since making my experiments); but thus much I can take upon me to say, from my own knowledge, that lucerne sown at random, or by what we call promiscuous sowing, as the ploughman sows rye-grass and clover, (whether with or without spring-corn) will not last to any tolerable purpose above two years, or three at most. But, as this plant is of the greatest use and value, where land is dear and scarce, as near cities and towns, I see no reason to doubt, but that the same spot of ground may be continued as a lucerne plantation for half a century at least: for if the rows are three feet four inches wide, (which I look upon to be a *sine qua non*) then, whenever the old lucerne decays, new lines may be planted in the middle of each interval, which has lain fallow, and also been manured and pulverized for a considerable number of years; and thus progressively, *vice versa*, to a long continuance.

Not being able therefore to give positive satisfaction concerning the continuance of lucerne rightly managed\*, I shall propose something that is not merely a query, and which, perhaps, may give the reader an equivalent information. In a few words, it is as follows: when lucerne is grown old, and the owner proposes to break up the plantation, layers might be made from all the principal

\* M. du Hamel observes, by way of result from his experiments, that nine or ten years is the common date of transplanted lucerne, except it be managed with great art and skill.

*Elements d'Agricult.* Tom. II. p. 130.



pal stalks, and removed into fresh ground. These layers, in all probability, may succeed extremely well, according to some few experiments made abroad in the years 1755 and 1756.

As to the expence and risque of cultivating small quantities of ground, agreeably to the method here laid down, it is to be hoped that curious gentlemen will not be deterred by some few minute difficulties or objections, but give the present experiment fair, patient, and repeated trials; for neither the out-goings nor the hazard will be very considerable. But at present it is no-ways our intention to persuade farmers (at least such as are in low circumstances) to quit their *little certainty* for an advantage which may appear to them quite *uncertain*.

Let them wait, at least for a few years, in hopes some cheaper and more compendious method may be discovered for their sakes; and if, at present, they make any experiments, let them be in *small*.

The first point of consideration, when I undertook to recommend *transplanted* lucerne to the public, from my own experiments, *was to bear constantly in mind whether the profit counterbalanced the expences and labour of culture, and that in a double, or even treble, proportion; since, otherwise, I was doing little more than postponing utility, for the sake of introducing a new sort of husbandry, which only deserved to be called ingenious.*

We all know that the farmer expends much money, and gains very little from a crop of wheat at the expiration of his twelve months; but if we take ten years together, and compare the profits of lucerne on the one hand, and wheat, barley, oats, and clover, on the other, the balance will certainly turn in favour of the lucerne-crops, and that in a proportion of three, or two, to one, at least.

The expence of raising an acre of lucerne in the manner which we recommend, (and supposing even digging to be made use of instead of ploughing) amounts, as nearly as I can remember, to the following sums:

Fine-

	<i>l.</i>	<i>s.</i>	<i>d.</i>
Fine-digging and picking thirty perches for a nursery *	—	—	—
Seed	—	—	—
Hand-weeding the nursery twice, and transplanting into vacant patches such plants as stand too thick	—	—	—
Digging an acre for receiving the roots	—	—	—
Transplanting	—	—	—
Hand-weeding and hand-hoeing the rows, with a four-inch hoe that cuts downwards, and then with a larger plantation-hoe which cuts horizontally	—	—	—
Two horse-hoeings	—	—	—
Total	—	—	—

It is true, the expences of raising lucerne, in this manner, will vary, when applied to parts of England different from those where the experiment was made, as the price of labour may be dearer, and rents run higher; but then the ground ought to prove better, which will balance the difference.

This plantation of lucerne may be cut three times, the first year after transplanting, as some repayment for the out-going expences: next year the profit will be more considerable.

On the other hand, those who prefer the drill method of raising lucern, as less expensive, may seem to save about two pounds, or more, upon an acre, at the first appearance of things; but then the rows, in case the crop succeeds, (which is a doubtful point) must be thinned

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N n

with

\* For fear of accidents, it might not be amiss to set apart a quarter of an acre for a nursery. An over-plus stock of plants will enable the owner to pass by the weaker ones, and leave them to remain for another occasion. I subjoin this caution, as I have before mentioned only thirty perches: and thus every cultivator may follow his own judgment.



with good judgment, which will cost money; and the vacancies in them must be filled at last with transplanted roots: nay, M. de Chateauvieux asserts, that *drilled* lucerne will rarely be so large and flourishing as the *transplanted*; for the effects of horse-hoeing, and the influence of manures, may prove of less service to the roots of the *former*, at a depth of twelve or thirteen feet, than to the roots of the *latter*, whose finest imperceptible fibres will hardly descend above a yard perpendicular.

It is hard to say at what precise time the assistance of the hoe-plough should be called in: but the owner of the plantation may venture on the attempt, I think, with safety, in three days after the second cutting, about the beginning of June\*; for the roots then will be tolerably well settled in the ground, and before that time the flat plantation-hoe may be used, chusing such an one as is about eight inches and an half wide in the cutting part.

As continued hand-hoeings will be chargeable, troublesome, and almost endless, (being, in truth, little more than a temporary expedient, and slight scratching the surface of the earth) remember to make a light plough, with which you are to cultivate the spaces between the rows; and in this case you may either invent a plough according to your own fancy, or copy such as are used at home, or in other countries, on the like occasion.

The share of this plough should be sharp, about sixteen inches long, with a coulter proportionable; the plough itself no heavier than a strong lad of fifteen years of age can carry: and thus one horse, after some obstructions of no great consequence in the first attempt, will afterwards draw it with ease. Yet still the trouble will be lessened, if the field be prepared by digging and picking up the roots and stones, instead of common ploughing, just before the ground is to receive the transplanted roots: therefore, after a full second consideration, the *former* practice

is

\* This relates to lucerne transplanted in August.

is recommended preferably to the *latter*; and, if the lucerne stands nine or ten years, the difference of the expence will not be perceived.

As the rows will be one yard four inches asunder, there will be room sufficient to guide the plough safely along the intervals, and yet no room to spare: it behoves the ploughman therefore to be extremely careful in the slice he cuts next the lines: such a stroke must be a shallow and a dexterous one; nor must he approach too nearly. A man, an horse, and a boy to lead the horse, will manage an acre in a day when they know their business; for it is more a matter of nicety than fatigue, since the ground ploughed in an acre will hardly exceed half an acre.

After the first time of using the horse-hoe plough (which a man's own discretion, upon considering the strength of the plants, will best determine) it may be laid down for a general rule, *that it will be always found most convenient to horse-hoe the intervals (as long as the plantation stands) the third day after each cutting; for by that time the new shoots will make the plants visible, nor will any side-branches stand in the plough's way.*

It may be proper also to hand-weed the lines once a year; and the larger weeds may be taken up expeditiously with the three-pronged spade, or the field-spade\*.

We will now consider the expences of an acre of lucerne the second year, which will stand as follow:

N n 2

Clearing

\* The field-spade, for taking up weeds, should be two inches and an half longer in the bit than the London garden-spade, and one inch and an half narrower between side and side, being, at the same time, well pointed with tempered steel.—This implement of husbandry is chiefly used by foreigners in cleansing fine grass-fields once a year, in April. When the weed is taken up with all its roots, a few grass-seeds are sprinkled on the spot where it grew; but this relates to common pasture-meadows.



	l. s. d.
Clearing the lucerne-plants from weeds in the rows by hand	0 8 0
One hand-hoeing of the intervals	0 8 0
Four horse-hoe ploughings	0 11 0
Compost-dressing for manure, or foot, wood, or peat ashes, at an average <i>per year</i>	0 10 0
Dispersing the manure	0 3 0
Total	2 0 0

Such will be the yearly charges, or in some proportion very like them, during the continuance of your lucerne, which I fix at a medium of ten years: M. de Chateaurvieux says it may last twenty; and Pliny goes as far as thirty; though the expression may be looked upon to be exaggerated\*.

In regard to manuring lucerne, it may suffice to suggest here in general terms, that, if the ground be stiff, cold, and of a clayey tendency, then wood-ashes, foot, and lime are proper dressings. If the ground be hot, shallow, and brashy, a compost of calcined clay, dung rotted to a fine mold, and pond mud, long exposed to sun and frosts, and frequently turned, may have its use: and if the ground proves of a middle nature, then malt-dust will not be amiss. All these manures are easily procured, and therefore we have mentioned none that are scarce and dear: but as variations of soil are infinite, and few people know the true nature of any field, (especially if it be of the mixed kind) we recommend the *compost-dunghill*, as the surest and most universal assistant upon such occasions.

Many other manures may be good for lucerne, but dung probably is not one of the best, except it be very old, and well corrected with proper mixtures of a sweet, as well as fertilizing nature, sufficiently warm and cherishing, but no-ways rank; for dung (especially if it be new)

produces

\* *Histo. Natural*, lib. xviii. c. 16.

produces in general very luxuriant, troublesome weeds, insects in abundance of various kinds, and gives the grass a foul, cloying, putrefied taste.

The owner's eye, it is true, may be deceived, and his hopes encouraged by the largeness of the crop; but the sagacious four-footed animals will distinguish better than we can pretend to distinguish; and, if they could present a petition to their masters, as the white heifers are reported once to have done to the emperor Julian, they would remonstrate not a little against the immoderate use of this manure. Nevertheless, assertions like the present ought to be confirmed by some proof: an experiment therefore was made upon four acres of grass-ground, of which *one half* was dressed with stable-dung, and the *other* with wood-ashes kept dry. The *former* moiety appeared the most rich and luxuriant of the two, but the cattle always neglected it, till they had bitten the *latter* down to the bare earth.

Having thus given the result of my experience in regard to dung as a manure for lucerne, I shall subjoin only one short caution, which is, that no dung, not even of the best kinds, must be spread on a lucerne plantation, till it be two years old at least.

In all grounds inclinable to moisture, and such particularly as are of a clayey cast, it is pretty certain that the preference ought to be given to foot-dressings, and, after foot, to chimney-ashes, (those of green wood especially) provided they are housed and secured from wet; then soap-boilers ashes may take place, coal-ashes well sifted, charcoal-ashes, and malt-dust; nor might the ashes of lime be amiss, nor lime itself, when mixed with such fine mold as may be found under a short sweet turf, in lanes or commons. The compost-dunghill also, as observed before, should be applied to, which, at the end of twelve months, having been thrice turned, will spread almost as well as ashes or foot: nor will such compost want strength when it is rightly managed; for if the dunghill be moistened at times with the brine, soap-suds, dish-



dish-washings, and chamber-lie, &c. of the family, then, when it is removed into the fields, the sharp, pungent, strong salts, which fly off, will make the labourers sneeze, and occasion a smarting in their eyes.

When you manure lucerne with foot, dry chimney-ashes, lime, soap-boilers ashes, &c. it is sufficient to dress the *rows* only, because these finer sorts of manures may be dispersed in the nicest exactest quantities, if sown, in the Berkshire manner, with a *peat-ash spoon*; but if coarser manures are to be employed in larger quantities, as old dung, marle, compost-dressings, &c. I would then advise the proprietor of the field to manure *the intervals and rows promiscuously*.

Nothing can be more cheaply and easily managed than manuring lucerne with foot-dressings; for the labourer, if he makes use of a peat-ash spoon and seed-lip, may sprinkle the rows of an acre in four or five hours, walking down the first interval and returning by the second, and so progressively.

Ashes may be sown in the same manner.

It may not be amiss to answer a couple of questions which have been often proposed to me in letters.

The first question is, How, and in what manner (by way of result from the considerable number of experiments made by me) I would advise any gentleman to prepare three or four acres of land for receiving lucerne? this being an undertaking of some moment.

The second question is, How to perform this work in the shortest, safest, and most œconomical manner?—Concerning both which points my ideas are as follow, this only premised, that I am here endeavouring to make the expence of the undertaking as cheap as possible, otherwise, where people pay no regard to a few incidental charges, I would recommend Mr. Boyle's method of preparing a field for receiving transplanted lucerne, who began his experiments of lucerne in the same year that I did, but proceeded upon a larger scale, for he undertook the culture of six acres at once.

His

His preparation of the field was as follows :

In the year 1757, he gave his field a summer fallow, and having thoroughly ploughed and harrowed it, (not as farmers understand these words, but effectually, instead of superficially) he sowed wheat after the ground had been dressed with lime. In 1758, his crop of wheat was very great. Immediately after harvest, he gave the land in question a severer discipline, using every method for pulverizing the earth, and extirpating weeds, that the best husbandmen are acquainted with, either in our kingdoms or abroad ; so that the field appeared again a perfect fallow. Then ploughing it very narrow and sharp, he made water-thoroughs with the plough, and left it in this condition for the winter 1758.

In spring, 1759, he made many French drains in the field, as before he had made open ones for the winter ; and, by stone-picking the land, had nearly stones sufficient to fill them. In March, the same year, (taking advantage of the first fine weather) he slit the ridges with the plough, and reduced the land to the finest tilth he was able, and transplanted the lucerne from his nursery in autumn ; in the whole process of which, he followed Du Hamel exactly.

Nothing in husbandry could be more sensible and masterly than this preparation of a large piece of land for receiving lucerne.

In the present case it may suffice to say, that supposing the nursery to be properly prepared, and the seeds sown in the first week of April, before the season for transplanting, according to directions already given ; I would recommend a field in good tilth, after barley-harvest, and before oats have been sown in it. This field should be thoroughly ploughed and harrowed twice, which we will suppose to be, for example, in the autumn of the present year, 1764. After each ploughing and harrowing there should be a very diligent burn-beating. But, if the season should prove too wet at the time of a second burn-beating, we make a virtue of necessity, and the weeds and trumpery must be raked together and carried off.



Then give the field a trench-fallow ploughing for winter, and early in March, 1765, (if the weather any-ways permits) having manured your ground as the relative nature of the soil requires, and ploughed and harrowed it again to an exquisite fineness, drill in a crop of field-pease, as early in the spring as is consistent with prudence and safety; for this crop must be ripe, and removed, by the last day of July. Much depends upon this point of fore-sight: however the pease, by standing thinner than in hand-sown, promiscuous crops, being at the same time banked and hoed with greater ease, and enjoying more room, free air, and sunshine, will, in all probability, gain an advance of ten days, at least, in their ripening. This will be a great point secured; for it is in husbandry as in war; there are critical moments, which never present themselves a second time in the same campaign.

This pea-crop being hacked, and moved from the field by the fourth or fifth of August, call in all the assistance you have of husbandry-strength, or can procure, and plough and harrow the field, and burn the pea-roots, weeds, &c. as often as you have time, before the twentieth of August; and then (your nursery being supposed to be in perfect readiness) transplant your roots as before directed, and contrive to close your work by the end of the month."

Having thus, I hope, put your farming readers in a capacity of judging for themselves in a matter which I think of some importance, I shall take up no more of your time, but conclude myself,

GENTLEMEN,

Your very humble servant,

October 25, 1764.

EBORACENSIS.

NUM-

## NUMBER LXI.

*On the Benefit of Malt-Dust, as a Manure for a stiff Soil ;  
with a Relation of some Experiments made to ascertain its  
Virtues.*

GENTLEMEN,

**F**OR the benefit of your farming readers I shall communicate a few experiments I made some time since, in order to try the virtue of malt-dust as a manure for a crop of wheat.

I had often heard it asserted, that malt-dust was much better suited, as a manure, to barley than wheat ; for the latter lying a whole year in the ground, and the malt-dust being sown with it, the virtues of the manure were exhausted long before the summer, when the corn principally wants nourishment, being advanced in its growth, and served chiefly to make the wheat winter-proud.

Others, contradicting this assertion, said it was best for wheat, and made it appear that it often caused very good crops of corn, particularly after a hard winter.

Being determined in my own mind to try some experiments in order to determine this matter, I pitched upon a field of ten acres, which had borne a good crop of horse-beans ; after which it was sown with turneps, which being fed off, it was summer-fallowed, being intended for wheat.

The soil was a stiffish loam ; it was in good heart, and tolerably clean.

I divided this field by deep furrows into ten equal parts, each containing one acre, numbered 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10.

The whole field, during the course of the fallowing, had four ploughings, which reduced it to a fine tilth.

When wheat seed-time came, I sowed number 1. broad-cast, with three bushels of wheat, and ploughed it in, laying on no manure whatever.



Number 2. I sowed with the same quantity of wheat after which I strewed over it ten quarters, or eighty bushels, of malt-dust, and ploughed that and the seed in together.

Number 3. I sowed also with wheat in the same manner, except that I deferred strewing on the malt-dust till the latter end of January.

Number 4. had a dressing of dung in the ordinary way, and was sowed with three bushels of wheat like the other parts.

Number 5. was dressed by sheep-folding, and was also in like manner sown with wheat.

Number 6. was sown with wheat in the same quantity, and in February, after sowing, received a half dressing of very rotten dung, which had been several times turned and mixed.

Number 7. after receiving a ploughing in the spring, was sown with ten pecks of barley, which was harrowed in, and no manure at all applied.

Number 8. was sown with barley, as above, but had ten quarters of malt-dust laid on it.

Number 9. had in the winter a good dressing of dung, and was in the spring sown with the same quantity of barley.

Number 10. was sown with barley, like number 8. only it had five instead of ten quarters of malt-dust laid on it.

It may be necessary, perhaps, to observe, that all the pieces of wheat were sown the first week in October, and all the barley the second week in March.

Soon after Christmas I went to take a view of my wheat, when I found that the acre marked number 2. looked most forward and flourishing; though I must own there was in appearance but little difference between that and number 4.

The numbers 1, 3, and 6. neither of them looked so vigorous as those already noticed; and number 5. seemed rather thin on the land; but the wheat plants were in good condition and healthy.



In May I took another view of my wheat crops, and found number 1. tolerably clean, and promised well.

Number 2. gave me hopes of a large crop, and was surprisngly clear of weeds.

Number 3. was greatly improved since the laying-on of the dressing of malt-dust.

Number 4. looked very vigorous and strong, but was very foul, having several sorts of weeds not to be met with in other parts of the land.

Number 5. was thin of plants, and they did not branch much; however, they still seemed healthy and strong.

Number 6. was like number 3. greatly improved; but it was foul, and, what appeared strange to me, had many weeds of a nature quite different from those with which number 4. was infested, though the dung laid on both these parts was taken from the same heap.

I, at this time, also looked at my pieces sown with barley, when I found number 7. promising and clean.

Number 8. was forwarder, and flattered me with the prospect of a large crop.

Number 9. was forward and fine, but foul with weeds.

Number 10. bore much the same appearance as number 8. and promised as well.

At harvest number 2. of the wheat was first fit to reap, after which succeeded number 4. the rest were ready nearly at the same time.

Of my barleys, numbers 8. and 10. were first ready to mow.

I suppose it is unnecessary to observe that those crops which were clearest of weeds were the soonest fit for carrying.

I ordered these crops to be all laid separately; and as I was obliged, just after Michaelmas, to go up to London, about some particular business, I left orders with my bailiff, that they should all be separately threshed and dressed as early as might be in the winter.

The produce of the several crops was thus distinctly noted to me, for I had ordered that particular care should be taken not to mix one with the other, and my orders



were, I found, on enquiry, punctually carried into execution.

	Bushels.	Pecks.
Number 1. unmanured, yielded of wheat —	20	1
Number 2. manured with malt-duft when sown — — —	28	3
Number 3. manured with malt-duft after Christmas, by way of top-dressing —	41	0
Number 4. manured with dung in the ordinary way — — —	32	2
Number 5. folded with sheep — — —	29	3
Number 6. dressed with rotten dung in February — — —	30	0
Number 7. unmanured, yielded of barley —	32	3
Number 8. manured with ten quarters of malt-duft when sown — — —	48	0
Number 9. manured with dung in the winter	40	2
Number 10. manured, when sown, with five quarters of malt-duft — — —	44	0

I must, with your leave, trespass upon your reader's patience till I make a few observations on the above state of the produce of my crop.

First, I conclude, that when malt-duft is used as a manure for wheat, it is best to lay it on by way of top-dressing after the corn is come up, as the crop of number 3. yielded above twelve bushels more than that of number 2. and I am apt to think that the virtue of the malt-duft laid on number 2. was exhausted before it could be of any essential service to the crop; whereas, in number 3. the manure began to yield forth its virtues just as the wheat-plants began to be in want of a fresh supply of nourishment. It was also observable, that the grains of wheat which grew on number 2. were thinner, and had less substance, than those of number 3. the grain of which was fine, plump, and heavy.

The produce of number 4. convinces me that malt-duft is, in many cases, a better manure for wheat than dung, not only as it gives a larger encrease, but also because it



it does not stock the land with destructive and devouring weeds.

The wheat grown on number 5. was as fine as that of number 3. but considerably less in quantity, as appears by the account.

I do not much approve of the method pursued in number 6. yet is it a good alternative, if the farmer happens to have too little dung to dress all his fallows.

I judge also malt-dust to be a very good and profitable manure for a barley crop; but the yield of number 10. being forty-four bushels, and of number 8. only forty-eight bushels, which last is not an encrease in proportion to the additional quantity of manure laid on, I thence judge that eight quarters, or sixty-four bushels, of malt-dust, is the proper quantity of malt-dust to lay on an acre for a barley crop, and that at the time of sowing.

When I speak of malt-dust, I mean the kiln-dust, which falls from the malt in drying: as to the tail-dust, which falls through the screen whilst the malt is cleaning before it is put up in sacks, that may be applied to a better use, being generally given to pigs, and often to cows, in which last case it makes them give a great deal of milk: if I mistake not, I remember to have seen it recommended for this use by a sensible correspondent of yours in one of the volumes of the *Museum Rusticum*.

It has been suggested that the virtue of malt-dust, as a manure, lasts only for one crop; but this is a mistake, for when this manure is laid on in January or February, a good crop of barley may be had after the wheat.

It (I mean malt-dust) is of a very warm nature: this has induced many farmers to think that it will burn a crop; and I will not answer for it but it might do so on a hot gravelly soil; but on clay land, or a stiff loam, it seldom or never does any damage: and indeed the only danger is a dry time ensuing after it is spread on the land, for the first shower of rain washes it in, and secures the crop from all hazard of being burnt.

Many of my acquaintance, besides myself, have found that malt-dust is for a stiff soil a better manure than dung;



but the dispute among them was, whether it was most profitable to lay it on when the wheat was sown, or by way of top-dressing in January or February: however, since I made the above experiments, they are all converts to my opinion, and are determined in future always to dress their heavy wheat land with it after Christmas.

One thing more in recommendation of this my favourite manure let me add before I conclude, that nothing surpasses it when laid on cold grass grounds, to the amount of about eight quarters, or sixty bushels, on an acre, but not less.

Such as have not seen its effects in this way applied, would be surprised at the large encrease of sweet feed which it occasions: in short, whoever finds it necessary to dress such land, and can get malt-dust in a sufficient quantity, will do well to use it, as they will be puzzled to find any thing in the extensive circle of manures better adapted to the purpose.

I should be glad if some of your correspondents would give the public their opinions relative to the various disorders to which cattle are subject: this is a large field, and has, I think, had but little said of it in your collection.

In relating experiments in husbandry, a great deal will still be left to be regulated by the farmer's prudence, experience, and discretion, as circumstances of soil, seasons, &c. must vary; but in this matter of the diseases of cattle, if the symptoms of each disorder are but carefully pointed out, and the proper remedies laid down in plain language for the different stages of the disorder, there will be very little danger of the honest farmer's making any mistakes to his prejudice.

The fellows who go about the country, pretending to cure the diseases of cattle, are, in general, great cheats, getting much money, but doing little good. I never could persuade any of these gentlemen to let me examine the drenches they gave my cattle, being, probably, fearful I should thereby be enabled to discover and detect their gross ignorance.



It would also please me much to see in your work a letter on the subject of feeding cattle with carrots and parsnips, either of which I am told are very profitable when applied to this use. I should be apt, however, to imagine, that the first were most nourishing; though in this I may be mistaken, for I remember once, by way of experiment, to have fed some dogs with boiled carrots, mixed with barley-meal and pot-liquor; but they voided the carrots in an undigested state: yet their digestive powers may differ from those of black cattle.

I am, GENTLEMEN,

Your humble servant,

Northward,

A GENTLEMAN FARMER.

October 15, 1764.

## N U M B E R L X I I .

*Cart-Lodges recommended for keeping Farming Utensils under Cover.*

GENTLEMEN,

I Have this last autumn been a journey through several counties to the westward of the metropolis, and having been brought up in the country, the state of the farms I passed by naturally attracted my notice.

I shall not, at this time, trouble you with many observations I made; yet can I not omit mentioning one most notorious instance of neglect and slovenliness in a great number of farmers.

The thing I mean is, that they generally leave their waggons, dung-carts, ploughs, harrows, and other implements, carelessly lying about their yards, exposed to all weathers; by which means, being sometimes wet and at other times dry, they soon rot, consume, and wear out.

Many of these negligent farmers had no cart-lodges whereunder they might shelter their utensils; and others, who had them, made no use of them; so little attentive were they to their own interests.

Let



Let me recommend it to your readers who occupy land to be more careful than those farmers I complain of, and they will find a very material saving at the end of the year; for a waggon that is taken proper care of, and kept under shelter, will last as long again as if it is exposed to the weather; and the same may be said of ploughs, harrows, &c. I would have them attentive to every object that can any-ways conduce to their advantage, for I cannot but wish well to those most useful subjects, the farmers, as I was myself once a farmer, though now,

GENTLEMEN,

Your constant reader, and

October 6, 1764.

A MERCHANT.

## NUMBER LXIII.

### *Of the Improvement of wet Pastures.*

GENTLEMEN,

**A**S I have, within a few years, not only had some experience in my own farm, but observed the methods employed by many neighbouring gentlemen and farmers in mending their pastures, I shall communicate a few of my remarks to you on the improvement of wet pastures; a subject which may prove, perhaps, of some little utility, as I shall speak of nothing but what I have either performed myself, or seen hereabouts.

The particular lands of which I speak are loose, woodcock, brick-earth soils for about eighteen or twenty inches, and under that, clay to a great depth.

Some that I have improved myself were exactly level, so as to be quite poisoned with the wet, which could not drain off.

From the best observations I could make on many experiments, the following is the method which answers best to improve them. I shall also give you the expence with us.

The

The first thing to be done is, to make large, deep ditches round every field, and, if the fields are large, to divide them into smaller, of five, six, or seven acres each, by new ditches: nothing is attended with a more sudden improvement of all the ground near the borders of the fields, than good ditches.

I generally make mine six feet perpendicular deep, seven wide at top, and three at the bottom. I never pay for them by the rod, (which is customary) but give two-pence half-penny *per* load, of thirty bushels, for all the clay, &c. that is thrown out of them, and two shillings and six-pence a score loads for filling and spreading it.

These ditches should be made in such a manner that no water can remain in them, but a descent from one to another to carry it quickly off.

It may be easily imagined how much these must drain the land, besides the quantity of excellent manure (clay) which arises out of them. Add to this the great convenience of having such fences about a farm, that the farmer is sure to find his cattle wherever he turns them, instead of their breaking perpetually into his corn or hay fields, which, in multitudes of farms, is so often the case: it is sometimes the work of a boy, only to be hunting after hogs and sheep that go astray for want of good fences.

In the banks of new ditches we always lay white thorn, fifty roots to a rod (the workmen are allowed six-pence *per* hundred for gathering them); but I always avoid intermixing any thing with it, especially hazel, for in the nut season fences are pulled in pieces for the fruit by all the boys and girls in the neighbourhood; and oak, ash, &c. only give an opportunity to get over the hedge with greater ease. Sallow, willow, elder, &c. are to be avoided in the hedge, or by way of hedge stake for the dead hedge, as they grow so fast as quite to overshadow the quick, and even destroy it. After frequent cuttings, to render the plants thick and strong, I keep the quick regularly clipped, which, in a few years, renders the fence



impenetrable to man or beast, considering the largeness of the ditch.

If an old fence is grown bad and thin, or composed of improper plants, I never yet observed it improved by planting quick in the gaps: the best way is, to reverse the bank, and plant fresh quick.

One advantage arising from good fences is not apparent at first sight. To the disgrace be it spoken of most of the gentlemen of large fortunes round Bury, the game is wretchedly destroyed by poachers, who take it with night-nets. These vermin, who are generally labourers, swarm in every village round me. Their method is this: they take the farmer's horses out of his fields, and, after their doing a hard day's work, ride them all night, as fast as they can make them go, over the stubbles, to catch the partridges, blundering over every hedge (except such as I have described) in their way, oftentimes staking the horses, (of which two instances have I seen this season) making gaps in the fences, riding over standing corn, clover for feed, or any thing that is a cover for birds, and, after damaging the farmer in a most shameful manner, carry the produce of their infamous labour to many, who, to their great dishonour, encourage these rascals for their convenience. The money they get is spent at the next alehouse, and instead of doing the farmer a good day's work, they are drunk, asleep, or idle, the whole day.

Now there are very few farmers horses that will leap a gate; but most will plunge through such hedges as are common hereabouts: none could pass such ditches as I always make and recommend. A farmer in this parish has so effectually fenced in his fields with prodigious ditches, that I have heard him declare, that not a single night-netter has been on his grounds on horse-back; and were they to attempt it, they would lose more time in passing one ditch than was necessary to drag some whole farms.

The pernicious effects, to farmers, of this abominable practice, are notorious, and cry aloud for redress: if they  
would

would ease themselves, I know of no way but such ditches as I have described \*.

But to return.

When the ditching is done, the next work is to land-drain the whole fields in such a manner that every part of them may be laid dry. In a pasture of six acres I did two hundred rod. If there is the least fall in any part, or any place more wet than others, the drains should be cut through them. If the surface is exactly level, the depth of the drains should vary, so that the water may every where have a descent.

These drains are made here, in general, thirty-two inches deep, twenty inches wide at top, and four wide at the bottom. They are filled eight inches deep with either stones or wood; but I should ever recommend the former, as the most effectual and lasting, to those who are not desirous of saving the difference of the expence. However, I know many fields in this parish and neighbourhood that are drained with wood, and which answer extremely well; and I have been assured that they will last twenty or thirty years. Nay, in some parts of Essex I hear they do it with straw alone; but this must be of service for only a few years: if stone be used, there can be no doubt of its lasting. The labour of the whole is three-pence *per* rod; sometimes it is done for two-pence half-penny.

If with stone of the farmers, a load of thirty bushels will do three rods, which costs one shilling and a half-penny stubbing and picking; so the expence of a rod is seven-pence, besides carriage of the stone, which will not be much: but if he buys his stone, as is much the most probable in this country, we may suppose he must go two miles to fetch it, and give a shilling for eighteen bushels ready picked: the carriage is worth a shilling more, and reckoning the eighteen bushels to do a rod and half, (which is near the matter) the stone of it will cost *per* rod one shilling and four-pence.

P p 2

If

\* If there were no buyers, there would certainly be no unlawful killers of game. E. R. O.



If bushes are used, a load of forty faggots will cost if he buys them, or be worth if he has them, five shillings, and cost cutting one shilling. They will do ten rods; so that the whole expence of doing a rod with them will be ten-pence, and of stone one shilling and seven-pence.

The very first year the prodigious advantage of these drains appears, especially if the season proves wet. The grass (or corn if in ploughed fields, for it answers in all) will be fresh, vigorous, and sweet, wherever the pastures are drained.

I have a field of six acres, (mentioned above) which by land-draining, ditching, and manuring, is an exceeding good pasture, and has produced two tons and ten hundred weight of hay *per* acre, in a very good year, and generally thirty-five hundred weight *per* acre; whereas the pastures adjoining are scarce worth the farming, and let but at seven shillings *per* acre, producing scarce any thing but a little feed for lean cattle. The soil is the same in both; the six acres, about twelve years ago, being full as bad as the rest.

To improve such wet land, nothing can be more advantageous than the clay which is thrown out of the ditches. Eighty loads *per* acre is the quantity I have laid on, and have been told by several sensible farmers, (who clay a good deal) that it is a proper covering; but if nothing is mixed with it, ninety-five or one hundred. I know a piece of grass-land greatly improved, on which were spread one hundred and fifty loads.

My method is to make a large hill of manure, by first laying a quantity of clay regularly on a heap; then placing a thin layer of muck, such as I have, upon it, either my stable or rack-yard dung, or bringing it of any kind in my waggon from Bury; on this layer, another thick one of clay; then the second of dung, and so on; letting the proportion be about twenty loads of dung to fifty of clay. These heaps, after remaining six months without stirring, I mix well together by turning them over, which a workman will do at the rate of eight shillings for one hundred loads. Let it lie six months longer in this state, and then

carry it on to the land, paying two shillings and six-pence *per* score loads for filling and spreading. This I take, from experience, to be by much the best way of manuring with clay, as it works and impregnates the soil much sooner than alone\*.

Whenever I clay arable land, I do it on clover pastures after the crop of corn is off, managing it in the same manner as for pastures. If it is ploughed in directly, it is several years before it works; but having a winter and summer to dissolve and powder it, it washes into the soil more equally, and in a properer state for improvement.— See the *Letter from an Essex Farmer on the Benefit of Chalk*, page 198 of this Volume; one of the most sensible and penetrating pieces that has appeared in your miscellany, and which, I am persuaded, is the result of long experience, as well as clearness of reasoning.

These are the principal points to be observed in improving such wet, cold, loose, pastures as I have described; some that I have quite changed by these means were half over-run with moss and rushes; but draining them thoroughly, and claying them, kills all rubbish of this sort, and presents the farmer with so admirable a view of good pasture for dairy or grazing, where so lately nothing could live, as is to be equalled in scarce any thing of the kind.

But as all improvement ceases to be such when more money is spent in it than the advantages will repay, I shall in a few words display how far this is from being the case here. I will suppose two or three fields are improved, amounting in the whole to twenty acres.

l. s. d.

Sixty loads of clay *per* acre thrown out of the  
ditches, twelve hundred loads, at two-pence  
half-penny *per* load — — — 12 0 0

I will

\* We are inclined to think that if this gentleman was to add a small proportion of lime to his muck-heap, it would greatly improve the manure, and occasion it to mix sooner with the soil. E. N.



Brought over	—	—	—	12	0	0
I will suppose sixty rod of new ditching done, which, before clay is thrown out by the load, will cost one shilling <i>per</i> rod	—	—	—	3	0	0
Three thousand quick-sets, at six-pence <i>per</i> hundred	—	—	—	0	15	0
Land-draining seven hundred rod with bushes (this is the quantity I have now marked out in a field of twenty acres) at ten-pence <i>per</i> rod				29	3	4
<p><i>N.B.</i> I had a great part of my last crop of barley killed in this field with the wet: I had therefore a fine opportunity of marking exactly where the drains should be made, which ought, on such occasions, never to be omitted, were it only for the common water-furrows which are made for every crop. In some fields, unless such a guide offers, it is very difficult to tell exactly where to make the land-drains.</p>						
Turning and mixing one thousand six hundred loads of manure	—	—	—	6	8	0
Filling and spreading one thousand six hundred loads, at two shillings and six-pence <i>per</i> score				10	0	0
<p>I will suppose that the work may be done the sooner if the farmer brings one hundred loads of the four hundred of dung from the nearest town; and as I have not reckoned the horses and driver for the clay cart, I shall not in the bringing the dung: therefore the expences <i>per</i> waggon-load will be, the cost three shillings, boy six-pence, and turnpike six-pence. A waggon-load is two tumbrel-loads (in this country); so fifty loads, at four shillings, are</p>						
				10	0	0
Total	—	—	—	71	6	4

This is three pounds eleven shillings and three-pence *per* acre: and supposing the profit to last but twenty years, although the draining and ditching part will last twice that time, and the clay five and twenty as good as at first; and the farmers hereabouts seldom change their farms, if tolerable

tolerable ones, living in them their lives, and their sons after them, with leases of seventeen, twenty-one, and twenty-five years: supposing twenty years profit, I say, the expences will then be, *per acre per annum*, three shillings and six-pence half-penny.

So small is the expence divided. But now let us consider the profit.

Such land as I have described never lets here for more than ten shillings *per acre*, by far oftener for eight shillings, or eight and six-pence; and it is from my own experience, as well as various observations, that I assert the same land, after the improvements, will let to any tenant for seventeen, eighteen, and twenty shillings *per acre*.

I will suppose it only sixteen shillings, though I am certain that is considerably under the mark: he then gains, in point of rent, six shillings *per acre*; and the whole calculation is absurd, if we do not add his whole proportional profit on the acre: supposing his profit on it before improvement was a rent, ten shillings; afterwards, it will undoubtedly be the same, at least; which adds six shillings more to the profit; so that the whole will be twelve shillings *per acre per annum*, or eight shillings and six-pence clear, after the improvement is paid.

				£.
Twelve shillings <i>per acre</i> is <i>per annum</i> , for twenty				
years,	—	—	—	— 240
Expences of improvement	—	—	—	— 71
Clear profit	—	—	—	— 169

Or eight pounds nine shillings *per annum*: and if we reckon five *per cent.* interest for the seventy-one pounds, that is, three pounds eleven shillings *per annum*, which, deducted from eight pounds nine shillings, leaves four pounds eighteen shillings *per annum* absolute profit.

I think, gentlemen, I have stated the case of this improvement clearly; and I must repeat it, that I speak from experience. The sum to be expended on twenty acres will appear large to most farmers, whose property is not considerable; but the proportion holds for a single acre,  
and



and those who cannot afford to improve twenty, may three, four, or five; and I make no doubt but such as attempt it will find their account in it greater than I have stated it.

As I have mentioned a tumbrel-load to be thirty bushels, and a waggon-load to be but two tumbrels, I should observe that we carry away of muck fifty bushels at a time in our tumbrels, and so agree with our men in proportion to the thirty-bushel loads.

I have observed, that in making new ditches, or enlarging old ones, I never pay by the rod, but by the load: however, to those who chuse the former way, I would recommend that they have them worked by a frame of small slit deal, nailed into the exact size of the intended ditch, and agree with the workmen to do their work by it: this will prevent disputes which frequently arise.

Before I conclude this letter I shall once for all apologize for the inelegance of my language, and, perhaps, unnecessary repetitions; but it appears to me that the *matter* of your work is infinitely more material than the *style* \*. Indeed it is almost impossible to attend with success to the diction of a letter which contains a narrative of farming experiments, full of cramp, barbarous terms, equally disagreeable and necessary: but in such a work as yours, which I must wish every farmer of common country education would read, one simple rational experiment is worth ten elegantly-flowing periods. The language of husbandry they may understand, but that of *style* is unintelligible as Hebrew.

In every piece you may be troubled with from me, I shall aim at rendering myself understood by those who make farming their sole employment and delight, even if it proves the occasion of my being obscure to others of better education.

It

\* If our correspondents letters are intelligible, and convey a clear and distinct idea of the meaning of the respective writers, we wish them not to be elegant in their style: plain narratives, conveyed in simple unadorned language, are most proper for the reading of the honest and industrious farmer. E.



It is for this reason that I must regret your most sensible correspondent on chalk (page 198, above referred to) using many terms totally unintelligible to the whole race of common farmers; the least prejudiced of whom might otherwise have read his letter with great satisfaction.

He should have considered, when he introduced *interstices*, *coherent particles*, *pulverization*, *attrition*, *congenial*, *impalpable*, *extraneous*, *meliorated*, that he would probably be read by men who had not Mr. Johnson's dictionary in their libraries. But above all, when he talked of *impregnated with nitrous particles*, *impregnated with the influences of the atmosphere*, a *stratum*, and a *vacuum*, he should have reflected that English farmers are not generally Newtonian philosophers; nor acquainted with the opinions of those of the antients:

All this is very proper if he wrote only to those of education; but let us never deliver the precepts of husbandry in a language unknown to husbandmen: yet this gentleman signs himself *A Farmer*, which in your next edition please to change for *A Philosopher*.

I regret this practice more particularly in the letter before me, as it is so excellent in other respects; that every farmer should be acquainted with it.

When your correspondents chuse to be obscure to farmers, I do not think it would be amiss if you were to explain their meaning in your notes.

I remain, GENTLEMEN, &c.

Bradfield, near Bury,

Y.

Nov. 5, 1764.

P. S. As I have an inclination to make a few experiments in the drill-husbandry, I should be glad if some of your correspondents would inform me where I can equip myself with a plough, horse-hoe, &c. since none of our wheelwrights have any idea of them; and it would be very satisfactory to myself and others, were the respective



prices of them to be added \*. If you think it an object of enquiry, I could send you the prices of all wheelwrights work with us †.

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## NUMBER LXIV.

*On the Improvement of a stiff Clay by Chalk.*

GENTLEMEN,

**Y**OUR correspondent, Number XLVIII. of your Third Volume, has made several judicious and useful observations on the subject of agriculture, and has shewn, from his own experience, the benefit of chalk to a stiff, cold, clayey soil.

His method of ploughing up the subsided chalk may be very advantageous to such farmers as occupy this sort of land, and can procure chalk at a moderate expence: and the same method may probably be extended to other land, manured with marle, clay, or sand.

But as the principal consideration in any method of culture is the profit, your correspondent will oblige your practical readers by giving, in his next letter, such a state of the expence of his method of cultivating this sort of land, and the crops it produces, as will enable them to judge how far it may be advantageous to them in their respective situations; and this will the more fully answer the

\* We would willingly oblige our correspondent in this matter; but he should have mentioned what sort of a drill-plough he would wish to have, as they are occasionally made of various kinds, and generally under the inspection of the person who has occasion for them. As to a horse-hoe, the common Rotheran, or patent plough, answers the intention very well when the earth-board is taken off. E. R.

† We should be much obliged to our correspondent if he would, in a future letter, inform us what are the prices of the several kinds of wheelwrights work; and if our other correspondents in the various parts of the kingdom would do the same, it might prove of great use towards ascertaining the expences of farming. E. N. O.

the laudable intention of your correspondent, as they can safely rely upon his information, being the result of experience.

Particularly, he is desired to mention how many cart loads of chalk *per* acre he laid at first upon this land, reckoning the cart-load at about forty heaped bushels; and how much it cost him *per* load.

Whether all the chalk subsides, or only what is finely pulverized.

How deep he commonly ploughs his land, and how much deeper than common when he trench-ploughs it.

What sort of compost he uses, and how many loads *per* acre.

What is the usual course of his crops upon this land, and how often he fallows it.

How much wheat, beans, &c. does such land commonly produce *per* acre, after it has been chalked; whether they are common horse-beans, or the large tick-beans; and if sown, drilled, or set by hand, and hand-hoed.

And if it is customary in that part of Essex to sow clover upon wheat in such land, at what time it is sown, and how much feed *per* acre.

In some chalk-pits the uppermost *stratum* is soft, unctuous, and darker than what lies below, inclining to a yellow or green colour. Several farmers prefer this for manure, and it is, I suppose, the sort your correspondent means as proper for light land: but large quantities of this cannot be had, because in such pits, as I have observed, it lies only near the surface.

There is also a considerable difference in the chalk of different pits, in respect to hardness and colour. The sort commonly used by coopers, carpenters, &c. consists of very fine particles, which, when dissolved in water, are, to appearance, nearly of the same size.

Your correspondent having spoken of chalk only in general, is desired to describe what sort of chalk he uses, and whether it is taken promiscuously, and at different depths, out of the pit.



The frequent ploughings your correspondent gives this land, is undoubtedly good husbandry; and he is desired to mention how often he usually ploughs it in the course of his crops, as this much contributes to his success\*.

I am, GENTLEMEN,

Middlesex, Your very humble servant,  
Nov. 8, 1764.

E. S.

## NUMBER LXV.

*A Letter from Mr. Aaron Ogden, a Smith, at Ashton-under-Line, near Manchester, in Lancashire, sent to the Editors, with a Model of a Machine for clearing Fallows of Weeds and other Trash.*

GENTLEMEN,

**I** Am a poor labouring man, and by trade a smith; but having a particular fondness for agriculture, it has led me to see if I could not invent a machine that would clear any sort of fallowed land from quicks, or other weeds, in a more expeditious and better method than is now in use in any part of the country that I know of: and I flatter myself, I have invented one which, if approved of, and encouraged by you, will probably be of great advantage, not only to me, but the public.

I have shewed the model to most of the farmers of note in our neighbourhood, and they agree, that, with little alteration, it (with three horses and two men) will do the work of forty men in the ordinary way, and save one time fallowing, which, it is allowed, will be nearly competent to the whole expence of working with the machine when completed.

But as our country only consists of little estates, it is scarce worth the while of any one farmer to purchase one himself.

I must

\* We should be much obliged to our correspondent if he would send us the explanation of the rustic terms he mentions; and should also be glad to hear from him as often as he pleases on other occasions. E.



I must confess the model I have sent is not perfect, yet am very certain I can soon rectify the deficiencies; but my narrow circumstances will not just at this time permit me, unless I meet with encouragement from the lovers of agriculture.

If what I have already done meets with encouragement and approbation, it shall be followed with other utensils as beneficial for the farmer.

Since I made the model, I have invented a harrow to go before it, which may be set to go to any depth in the furrow without weighting, and will break the clods, and raise the roots, or weeds, to the top of the ground quite effectually, and at the same time shall keep itself clean without the help of the hand, though it should raise as many as a cart would carry, in passing five yards: it is made quite plain and simple.

I have also invented a machine for turning hay with any number of rakes, the same as one worked by the hand; which is drawn by a horse, and works to the right hand one way, and to the left another way, or back again, in a simple manner.

I have also invented a machine for raking hay-grass into wind-row, drawn by a horse. It is of a triangular form, and leaves a row the point of each wing: the teeth are loose, and will drop into a hollow, and at the same time are prevented from entering the ground: it will take any breadth that does not exceed twenty yards, and that as clean as by the hand in the ordinary way, and as fast as the horse can moderately go, whether the ground be level or not.

If the model be approved of, I shall send up the others as fast as my narrow circumstances will allow.

My rakes will be extremely useful where there are large farms and few hands.

If you insert an engraved plate of my model in your useful work, I should take it as a particular favour if you would send me a few impressions, addressed to the care of Mr. Joseph Buckley, to be left at Mr. Harrop's, printer,  
at



at Manchester, who serves the gentlemen in this part of the country with your *Museum Rusticum*.

Believe me, GENTLEMEN,

With great respect,

Ashton-under-Line,

Your humble servant,

October 16, 1764.

AARON OGDEN.

*Explanation of the Plate representing Mr. Ogden's Fallow-cleaning Machine.*

A, A, is the frame; B, the first roller; C, the second ditto, in which last are two cranks to move the arms D, D, which work the rake up the directors fixed on the plank E. The under-side of the lower-ends, or shares, of these directors, are sharp to cut the clods, and let them come on the upper-side. Each alternate heel of the share is longer than the intermediate one, that they may not have more than one half to cut at once.

At the back of the plank E, are two screws to let it loose, that the directors may be set higher or lower. The shares are to penetrate the ground two or three inches, to raise the quicks till the rake I, I, fetches them into the cart H, where a man must be ready with a muck-hook to clear them backward when gathered.

In the rake I, are two teeth for every space of the directors, that stones, &c. may be gathered without damage.

K, K, are two staples, by which the machine is drawn: under them, at h, are two hooks, placed low to raise the machine in turning, by the help of the traces; and the axletree of the cart should be fixed upon a pin, that it may turn like a waggon.

F, F, are the triggers to throw the rake behind the roots. The long teeth at G, G, are to cleanse the roller C.

I, I, is the rake which gathers up the weeds into the cart H, and is drawn above the trigger F, by the working of the arms D, expressed by the dotted lines at dd, iii.

The

The triggers F, of which there is one on each side, move on the pivots *a*; so that when the points *b*, of the rake I, having been drawn up the directors E, to the part marked *c*, the trigger, giving way, permits the rake to pass; but immediately falling, the rake returns along the upper surface of the trigger marked *e, e*, and of course falls on the weeds when it comes to the end, a little beyond the pivot *a*.

The reader will observe that the boarding is taken away on one side, in the plate, in order to give a more perfect view of the inner parts of the machine; and, in fact, it would, perhaps, be better if all the boarding, marked L, L, L, was taken away, and frame-work put in its stead.

The cart H, might undoubtedly also be made lighter.

The wheels M, M, appear, in the plate, to be made of solid wood; but there is no necessity they should be so.

At N, is another view of the roller C, by which the disposition of the spikes may be easily comprehended.

Suppose the circle O, described by the end of the roller N, to be divided by four straight lines into eight equal segments, as represented at P. Let the same be done at the other end of the roller, and parallel lines be drawn from one corresponding point to the other, the length of the roller: mark the points with figures, 1, 2, 3, 4, 5, 6, 7, 8; afterwards draw oblique lines, as from 1, at the end O, to 2, at the other end, and from 2 to 3, &c. on these oblique lines the spikes are to be fixed, at equal distances, in eight circles, described on the circumference of the roller.

The spikes of the small roller B, are fixed in the same manner, except that, the diameter being smaller, there are only six instead of eight rows.

R, is another view of the directors, with the plank E, on which they are fixed; and at S, is a section of a part of the plank, with one of the directors as fixed, in which may be seen the heel *m*, from whence, to the point of the share *n*, is a sharp, cutting edge. See the same letters, in figure R.



At T, is one of the long teeth to be seen at G: it is bent towards the roller C, which it serves to cleanse. When the end of the rake *b*, after rising above *c*, is pushed, by the motion of the arms D, D, along the upper part *e, e*, of the trigger F, and comes to the end beyond *a*; as it falls, the part of the arm, marked *d*, rests in the notch *p*, till it is again raised by the motion of the roller C, with the rake.

The roller C, is to be one foot diameter, the spikes nine inches long, that they may go through the furrow (if the soil should be too loose) into the hard earth, the more effectually to work the rake, which otherwise might be so over-charged as to cause the roller to drag without turning.

In the rake-ends *b*, there should be pivots, with rollers or pullies on, to go in the groove, to take off the friction; and they would likewise take the triggers more surely as the rake comes back.

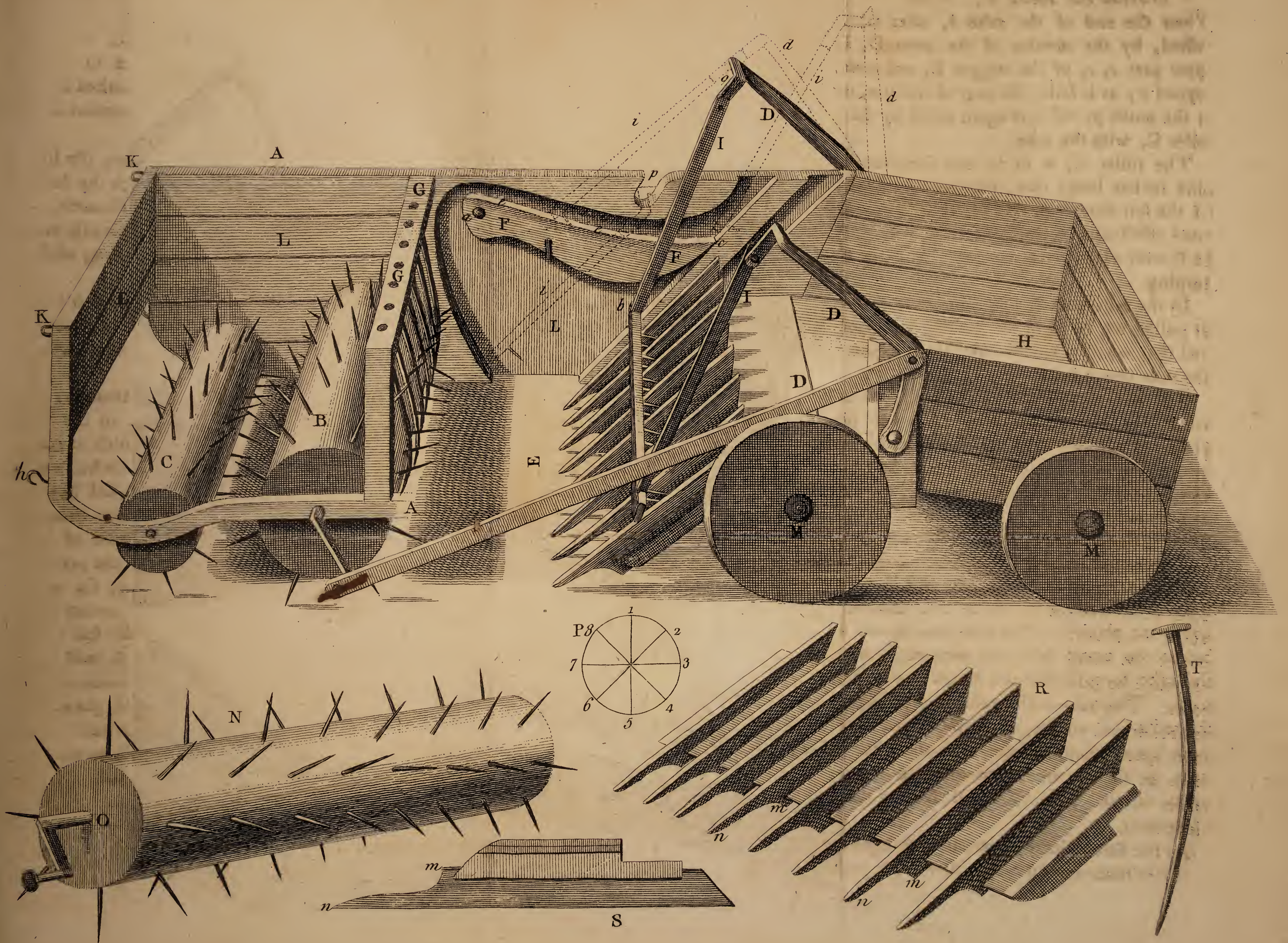
The rake should also be hung so far backward, that when it is fallen, the arms of it may lie in the same plane, or parallel, with the directors, on which it comes up (which will require the frame to be two inches longer in the model). This will cause the rake to fall heavier, and drive the teeth into the roots, and bring them up without shattering. These teeth must be made of steel, very fine, and so long as to reach down to the plank on which the directors are fixed, that is to say, six inches long (the directors are to be also made six inches broad above the plank). The rake-head should also fall a little before the crank is at the extremity, which will cause the rake to push forward to let the teeth come into the roots. The rake-teeth must drop in the same plane with the roller and wheels, or on the surface of the earth. No more space should be given from the roller C, to the long teeth at G, G, than that the rake may just miss the spikes of the roller C, and fall on the place before mentioned.

As the first roller B, was intended to cleanse the second C, more than any other use, it may be omitted when the machine



*A Fallow-cleaning Machine, invented by M.<sup>r</sup> Aaron Ogden, a Smith at Ashton Underline, near Manchester in Lancashire.*

*Engraved for the Museum Rusticum Vol. III.*







machine is made in large, as Mr. Ogden has lately found that the long teeth at G, G, answer the end alone, and this renders the machine about a sixth part shorter.

Now, to suit any sort of earth, there should be to each machine three planks, with directors at different spaces to use occasionally: in the first, the spaces between the directors should be eight inches wide, in the second six, and the third four. This will answer the same end as having so many machines.

As there may be some objections to the rake not leaving the roots when it has brought them up, Mr. Ogden has several methods for cleansing it; but as he would make it as simple as possible, he chuses to let it be without them at present: but suppose it should bring some roots back again with it, it will probably lose them before it gets back to the extremity; whence they will lie light, and be of but little detriment to the others coming up.

Mr. Ogden would have the first machine made four feet six inches wide, the teeth divided into equal spaces, the out-sides into half spaces.

As to the cart, he has thought of no positive method of fixing it, but has several ways at hand: for as many different teeth-boards there must be as many rake-heads to suit them, which must be fixed to the arms with screws.

## NUMBER LXVI.

*A Letter from the Rev. Mr. Richard Wallis, Curate of Carham, near Berwick-upon-Tweed, containing a Method of curing Cattle that are swelled or hove.*

GENTLEMEN,

HAVING seen, in your useful monthly collection, a gentleman's great desire to know whether it were altogether safe to tap any of the black cattle that are

VOL. III. No. 15.

R r

much



much swelled, either from eating too greedily of clover, or from any other accidental cause; I thought it my duty to communicate to you, both for the satisfaction of that gentleman, and likewise for the future good of others, my little experience in that way.

Somewhat above two years ago, I had a fine calf, near four months old, which swelled all over its body to such a degree, that I hourly expected its death, owing, I believe, to its lying wet. This swelling, however, was with great difficulty carried off, by giving it internally warm and laxative medicines.

After this I sent it to graze with my friend Mr. Gregson's calves. It had not been long there, when that gentleman sent me word the calf was greatly swelled, and in all probability must die very soon, except immediate relief could be procured.

I forthwith ordered one of his men, upon seeing the distress of the poor creature, to run his pen-knife, as deep as he could, through that part of the swelling which rises highest near one of the hip-bones, and to put into the orifice the barrel of the largest quill that could be got, in order to carry off the pent-up wind.

This having been done, the wind rushed out with a surprising force and offensive smell; and, that none of this putrid fluid might be left behind, we pressed its sides together as close as possible.

The calf found immediate relief, drank its milk, eat some hay heartily, and continued well till a fall of rain made the swelling return, which induced me to tap it again; and it mended.

Three times after this, upon catching cold, it swelled, and was tapped, always receiving sudden and surprising ease.

Upon this I had a vein opened, and the blood was, as I expected, thick, and had scarcely any *serum* in it, resembling that of a person in an ague: hence I thought a fellyon-drink, such as is generally used, would carry off the distemper altogether.

Such

Such an one I made \*, and gave it; and the calf has never had any return of the swelling since. It is now grazing with my friend's young cattle, is big with calf, and I trust will turn out a very fine cow.

I am, GENTLEMEN,

Your very humble servant,

Carham,  
Oct. 30, 1764.

RICHARD WALLIS,  
Curate of Carham.

N U M B E R LXVII.

*On the Benefit of Lime in Sea-Voyages, particularly to the Coast of Guinea, in the Slaving Trade.*

GENTLEMEN,

**I**N your *Museum Rusticum*, Vol. III. page 68, is a method of rendering putrid water sweet. As I write from experience, I hope what follows on that subject will be attended to.

I have been captain of a Guinea-man several voyages; on which occasions I always took a half-barrel of unslaked lime with me, to be ready to use to sweeten the ship's water.

On the slaves being turned down in an evening, we always got our water up, in a cask we have on purpose, abaft our barricade, first straining the water off out of the cask, being the sediment of what was left that day to put into the boiler (which was of iron, as I never used a copper) for the next day's slaves provision; then we filled our cask out of the hold, the water often being thick, and stinking very much; to remedy which we always put three

R r 2

or

\* We are greatly obliged to this gentleman for the favour of his letter, and shall be much pleased to hear from him whenever any future occasion offers. In the mean time we must request of him to describe to us the felloe drink he gave his calf, as these potions are not the same in all parts of the kingdom.  
E. R. O.



or four meat spoonfuls of the lime to a puncheon of water, containing about ninety gallons.

The following morning the water would be as clear as any spring water, and as sweet.

I shall say no more, but refer you to Alston's Dissertations on Quick Lime, and its great use in sea voyages.

I had always good success in both white and black from mortality, a great deal of which I attributed to the lime in water; and after using it a little while, the slaves would not drink the water without lime was in it.

Pray excuse the incorrectness of the stile, as I was an adopted son of Neptune at fourteen years of age: this must plead an excuse for me.

If this hint should prove of any service, it would give me pleasure to reflect I had contributed my mite, and wish I could do more for so good a king and my country.

I am, GENTLEMEN,

Your humble servant,

ONCE A SAILOR, NOW A FARMER.

*P. S.* In reading Dr. Mead's works, there is mention made of a ventilator by fire from the furnace, which being tried on board his majesty's ships, complaint was made of the fire going down with the pipe.

This might be easily remedied by forming it into the furnace with a swan's neck.

I am sure it would be of the utmost service on board a Guinea-man, as our furnace is fixed at the barricade at the main hatch-way.

From the pipe that leads to the well, there should be two branches of about a foot or two long, to which the leather ouses \* should be screwed; and at every fathom distance there should be wooden nozels, as they then might make the ouses longer or shorter, to be conveyed to what part of the ship they pleased,

\* Ouses are pipes of the same nature with the leather pipes used with fire-engines, E. R.

## NUMBER LXVIII.

*On the Culture of English Grasses.*

GENTLEMEN,

IT is with particular pleasure that I attend to the regard paid by the society of arts to the separation and cultivation of our English grass-seeds, and it is under the auspices of their committee of agriculture that I hope in a little time our best grass-seeds will not only be divided from each other, but cleansed of all that vast variety of weeds with which these valuable articles are, at present, intermixed.

This country abounds with a variety of plants every way fitted for the highest improvement of the vegetable pastures. Our honeysuckle, or red perennial clover, is superior to the common, both in its duration and sweetness, and our white clover equals any that is imported; and were we as well acquainted with the value of our several grasses, and their proper soils, I doubt not but our English pastures would be clothed with a verdure equal, if not superior, to the richest soils abroad.

I am satisfied, from the many experiments I have lately seen, that a division of the grass-seeds would be very useful; and I am the more convinced of this from the reception which the public gave to Mr. Rocque's timothy-grass, which is very useful for cold, barren, and wet clay soils, where it will make a good swarth in a little time.

This grass, upon near examination, appears to be the *common cat's-tail grass*; and though an useful grass of itself, yet I cannot suppose it equal to the *meadow and flote foxtail*, the *soft grass*, *fine* and *small bent*, all which, with several of the *perennial vetches*, and the *great birds-foot trefoil*, delight in the like soil with the *timothy*, or *cat's-tail grass*, and whose seeds would be proper to sow with it. I hope therefore the useful trials made upon timothy-grass will be a sufficient inducement to our countrymen, especially to



the society of arts, to give further and more effectual encouragement for the separation of the best English grass-seeds.

It would be a great satisfaction to all improvers of ground, to know the sense of the committee of agriculture upon the subject of grass-seeds in general; but as this cannot be had by us country people, I hope you, gentlemen, will give us your sentiments in answer to the following queries.

Query I. Whether the separation and culture of the best English grass-seeds, in such a manner as to enable seedsmen to sell the same in quantities, and in sorts, distinct from each other, would not be of national advantage \* ?

II. Whether it would not be of great use to the public to know the different soils, from the driest chalk-hills to the lowest meadows, upon which each species of grass-seed naturally grows or thrives the best † ?

III. Whether the seeds of the following, or any other, and what species of grass, are the most worthy of the attention of the public, *i. e.* ‡

The vernal *	Turfy hair,	Reed canary,
Lose pannic,	Early hair,	Flote fescue,
Meadow foxtail*,	Common poa*,	Rough oat,
Silky bent	Great poa*,	Tall oat,
Brown bent,	Annual poa*,	Yellow oat*,
Fine bent*,	Sheep's fescue*,	Cristed dog's-tail*
Wood broom,	Meadow fescue*,	The meadow soft
Field broom,	Cat's-tail,	grass?
Water hair,	Water fox-tail,	

IV. Whether

\* Undoubtedly yes, provided they could be afforded pure and unmixed at reasonable rates. E.

† Such a piece of knowledge would be of the greatest importance to the improvement of our pastures, if founded on experiments. E.

‡ We esteem the grasses recommended by the society for promoting arts, which we have distinguished in the above list by asterisks, to be as much worth the farmer's attention as any native grasses whatever to be met with in our islands. E.

IV. Whether a plain and useful treatise on our English grasses, distinguishing the kinds, sorts, and soils, on which each particular species grow, attended with accurate plates of each genus, and of the above, and other good species, from drawings taken when the grasses are in full flower, and also when they have perfected their seeds, would not be of singular service to all gentlemen farmers, and others, employed in the improvement of ground\*?

V. Whether it would not be of use to know the quantity of grass-seeds, when separate, proper to sow on each statute acre of ground; and whether it would be adviseable, along with the grass-seeds, to sow a quantity of honeysuckle, and white clover-seed, a small portion of ribwort, plantain, together with the several kinds of perennial vetches, or any other; and what kind of seeds, whose produce is nutritious to cattle†?

I am, with sincerity,

GENTLEMEN,

North of Trent,

Your humble servant,

Oct. 6, 1764.

Z.

## N U M B E R LXIX.

*On the Improvement of Fen-Land by burning.*

GENTLEMEN,

I Have your *Museum*, &c. for July, 1764, now before me, and observe the request you make in my letter at page 352, Vol. II. which I shall, in few words, answer.

To

\* We cannot think a treatise of the kind mentioned by our correspondent would be of much use, unless it was the result of actual experience, and the experiments made in the culture of the several grasses were particularly related in it: without this requisite it would probably mislead the cultivator, and thereby do much more harm than good. E.

† Was the culture of grasses ascertained by experiment, this question would of course be answered: till that is done, nothing can with certainty be said on the subject. E.



To describe the particulars of what should, or should not be burnt, I think, is not to be done in this place. In short, *all* fen-land, that is thought proper to be ploughed, should be burnt, as I have already shewn in my last letter, and cannot be improved by any other culture.

Lincoln heath, well known to most people in the kingdom, I saw, in April last, was ploughing for burning; but not with ploughs drawn with horses, for they used a sort of spade, they call a breast-plough: the men told me they had nine shillings *per* acre for ploughing or paring, and that three men could plough an acre in a day.

It is an expensive method, but it certainly is the best way of ploughing that sort of land the first time; for it is uneven, and pretty full of old ant-hills.

They ploughed it about an inch thick, which is thick enough: as the land is solid, it will produce a great many ashes of a strong good sort.

I passed by the same land again in August last: it had been burnt, and had then growing on it very fine crops of turneps; but, for want of their knowing how to manage turneps, or from a scarcity of hands, I cannot say which, but however for want of hoeing, they were ten times too thick.

I mention this as an instance to shew you that any land may be improved by burning.

If there are any other questions wanted to be asked, to what I have wrote relative to the culture of the fens, I am very ready and willing to clear them up in the best manner I can, notwithstanding I do not write my real name to my letters; nor is what I write theory, but from practice and experience\*.

I observe in the same month (July) a bounty given to one Mr. Ringrose, for his contrivance of a plough, and a horse-thistle cutter. I could wish, gentlemen, it was convenient,

\* We are greatly obliged to this gentleman for the several letters he has sent us, which will ever be a valuable part of our collection; and shall be glad to hear from him as often as he pleases. E.

convenient, in some of your subsequent Numbers, to intimate where the original, or a draught or description of it, may be seen \*; for last summer being a wet season, the thistles growing apace, and people scarce, put me upon an invention for that purpose, which, with some little alteration, will answer the intention. I have gone no further at present than making a model, which I have tried, but intend against next spring to have one made in large.

As I never saw any thing of that sort, but my own, I must confess it would give me great pleasure to see one: if mine answers as I expect, I will give you a draught of it †.

As I am one of your nameless correspondents, I must beg leave to dissent from Mr. Comber's opinion, that every person who writes letters for the *Museum Rusticum*, &c. ought to sign his name.

I should have taken the freedom to have given some reasons why I think it much better that they do not, than if they did; but, as contradictions may be affronting to some gentlemen, and I have always made it a point in my conversation to be careful in that particular, I think I ought to do so in this place, particularly as I stand, as it were, behind the curtain.

I am, GENTLEMEN,

Your most humble servant,

Middle Level,  
Sept. 29, 1764.

I. I.

\* Models of both Mr. Ringrose's machines may be seen at the society's repository in the Strand.

† We shall be very well pleased to have an opportunity of introducing to the public eye any invention of so ingenious a correspondent. E. R.



## NUMBER LXX.

*On staining Elm-Boards of a Mahogany Colour, and a Hint towards attempting to stain the Wood whilst growing.*

GENTLEMEN,

**A**MONG all the schemes for public utility which have lately been fallen upon, none seem to me so much calculated to that purpose as your *Museum Rusticum*, &c. which, in some measure, has begun a spirit of improvement, even in the most uncultivated places of this country, where, for many centuries, the unthinking farmers have jogged on in the old beaten path, without ever starting one new method of agriculture, or mending an old one.

Though I have been for several years very fond of the theory of farming, I know not how my speculations would answer in practice, and therefore have it not in my power to communicate any thing worth your acceptance relative thereto; otherwise I should gladly do it.

About a month ago the whole of your Numbers fell into my hand, in one of which I met with an essay on colouring of wood, to make it look like mahogany. See Vol. I. page 179.

As I am very fond of this sort of furniture, I immediately entered on some experiments to that purpose; but as a particular narrative of each would be too tedious to repeat, I shall only observe, that the method which succeeded best with me was as follows.

I took two pieces, one of elm and another of plane, both of which I stained well with aqua fortis.

I then took two drams of powdered dragon's blood, one dram of powdered alkanet root, and half a dram of aloes; from all which I extracted a tincture, with half a pint of spirits of wine: this tincture I laid over the wood with a sponge for two or three times, and it gave it the colour of a piece of fine old mahogany.

I should not have troubled you with this letter, had it not been with a view of exciting some of your correspondents,

ents, whose peculiar province this is, to communicate their methods of doing it to the public; and had I not also intended to propose it to the ingenious, who have leisure and opportunity to make the experiment, whether wood may not be more successfully and durably coloured when growing than afterward.

I have seen the bones of several animals very successfully coloured by feeding them with madder-roots; and since the circulatory vessels of trees are much larger than those of the bones of animals, and since trees suck their nourishment from the ground by inhalent tubes, analogous to the mouths of animals, may they not be fed in like manner with juices impregnated with red, which would communicate an uniform colour over the whole wood?

A great many more observations might be produced, to corroborate the probability that this experiment would succeed; but as I am resolved not to add enormous length to the other imperfections of this letter, I shall pass them over at present, and conclude with an endeavour to explain, in the shortest manner I can, the physical reason why the pigs, mentioned in one of your Numbers, were hindered from fattening by the use of cinders. See Vol. II. p. 11, and p. 173. of this Volume.

It is very notorious to every one who has the smallest knowledge of the nature and properties of bodies, that cinders are a strong absorbent; and as they remained whole in the stomachs of these animals, it appears to me that their manner of acting was, by absorbing the finest parts of the food in the stomach, after it had undergone what is called the first digestion; nor would their effects cease here, for they would also, in their passage through the guts, suck up, and carry along with them, large quantities of the chyle, whereby the animals would be deprived of their nourishment. This, I think, is, in few words, a very easy solution of the phenomenon\*.

I am, GENTLEMEN,

Edinburgh,

A sincere well-wisher,

Nov. 7, 1764.

S s 2

W. A. S.

\* This gentleman's future letters will be very acceptable, and we shall be glad to be informed by him, or his friends, what is the present state of agriculture in Scotland. E. R. O.



## NUMBER LXXI.

*The Method of making Coal-Balls at Brislington described.*

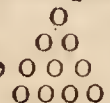
GENTLEMEN,

I Find that a neighbour of mine, in Bristol, who signs himself a Somersetshireman, has wrote you a letter, describing the method of making coal-balls in this part of the world.

I live at Brislington, and am of opinion that we, in this town, make as good coal-balls as they do any where; and as our method differs somewhat from those described by your correspondent, I hope you will indulge me so much as to permit your readers to be made acquainted with it.

We, in this town, take one third part of mud, (fleece) and two thirds of small coal (culm): these we mix very well together, after which we make them into round balls to burn; but if these are to be burned soon, it requires some skill to manage matters properly.

Almost all I know I have learned from experience, (for I have had but little school-learning) and this good mistress has taught me that the best way of burning these balls is as follows.

I use no grate, but burn them on the hearth. I first cause a few cinders to be lighted: when these begin to burn, I pile up the coal-balls over them, nearly in this form,  till they rise to a point at the back of the chimney. I then plaster the outside over with the mixture they were made of, and making a hole at the top, and another in the front, for the sake of vent, they burn well, and make an excellent fire.

I am, with great respect, GENTLEMEN,

Your humble servant,

Brislington,

AN HONEST FARMER.

Oct. 12, 1764.

## NUMBER LXXII.

*A Wiltshire Farmer's Method of procuring clean Seed-Wheat.*

GENTLEMEN,

**W**HEAT is a noble crop, and on it do farmers chiefly depend for raising money to pay their rent. As this is the case, every thing that can tend towards encreasing the farmer's profit, by his wheat, must, of course, be acceptable.

*Sow seeds and reap weeds*, has been an old saying in my family; and the meaning of it is, that most farmers are too careless in the choice and management of their seed-wheat; they sow with it the seeds of many weeds, which, vegetating with the crop, give them at harvest a crop they wish not to see on their land.

It will perhaps be urged that seed-wheat is generally very carefully dressed, being the prime corn, and fetches a price accordingly.

I allow that seed-wheat is often in the market sold one shilling in a bushel dearer than ordinary wheat, but I cannot so easily persuade myself that this seed-wheat is clean dressed. I know, indeed, by experience, that it seldom is so; for though I have been a farmer now above twenty years, I never yet bought any seed-wheat, and sowed it as I bought it, but it stocked my land with weeds.

I was, for this reason, under a sort of necessity of finding out some other method of managing my wheat for seed, and after many unsuccessful attempts I pitched on that which follows, and it has answered well.

I approve of a change of seed, and on this account I buy some wheat for seed every year; but I buy not what is in general called seed-wheat; no, I find it more for my advantage to buy the common wheat that is to be met with at market; but then I have a peculiar method of making it fit for my purpose, and, indeed, I prepare all my wheat for seed in the same manner.



I generally sow every year about seventy acres of wheat, and use about two hundred bushels of seed, or twenty-five quarters.

The instant harvest is over, I generally buy ten quarters of wheat for seed, and set some men to thresh the remaining fifteen quarters in my own barns.

I have already mentioned that I buy common wheat; but then I have it carefully picked over, almost grain by grain, before I attempt to sow it.

My method is, to have a long table, on each side of which four people may sit. The wheat is shot out of baskets on the table; and as the women pick out the prime grains clear from the seeds of weeds, they sweep them with their hands into bags nailed to the edge of the table. The bottoms of these bags are tied like a purse, and when they are full, (they hold about half a bushel) on loosening the string at bottom, the wheat falls into a sack held underneath for receiving it. To these women I give sixpence a day and small beer; and each of them will pick me five or six pecks a day.

In this manner I supply myself with good clean seed-wheat at a moderate expence; and I find, by repeated experience, that my crops are, by this management, much clearer of weeds than my neighbours.

But I must not, however, omit one circumstance, which is, that I lay no new yard-dung on my wheat-land: I fold what is at a distance from my house, and the rest I generally dress from a muck-heap two years old, and that has been twice turned: experience has many years since convinced me that vast quantities of the seeds of weeds are annually carried on land with dung.

I am, GENTLEMEN,

Marlborough,  
November 5, 1764.

Your humble servant,  
A WILTSHIRE FARMER.

## NUMBER LXXIII.

*An experienced Method of sowing Clover on Barley, recommended to the Notice of Farmers.*

GENTLEMEN,

**N**OTHING is more frequently practised than sowing clover with spring corn, and it is reckoned very good husbandry; yet is it often the occasion of great loss to the farmer, nay, sometimes almost the entire loss of a barley crop.

A few years ago I sowed twenty-five acres of land in fine tilth with broad clover and barley; but the spring being backward and cold, and the summer wet, the clover got too forward, and overpowered the barley.

At harvest they were both cut together; and the clover being full of juice, occasioned its being a long tedious time before I could house my barley.

When I had got it into the barn, the men complained much of its threshing so badly, that they could not undertake to do it unless I would double the price to them: this I could not afford; however, I ordered them to give it only a light beating, leaving the under corn in the straw, together with the clover, for my cattle.

I lost, in fact, half my crop by the clover; and what barley I got was lean, and thin bodied, fetching me but a very indifferent price at market.

As I had before experienced several such losses, I was determined to find out, if possible, some remedy. I applied to a neighbour, a very intelligent man, who advised me to sow my clover, for the future, a month after my barley, and it would not prove too rank.

I followed his advice, and found it to answer extremely well, insomuch that I have, to my great advantage, continued the practice ever since.

There



There is no danger of the clover failing, though the season should prove dry; and the seed is to be scattered on the ground without farther care, for there is no occasion to harrow or roll it: the roots and blades of the barley will keep moisture enough in the land to supply the small wants of the clover during its infant growth, and when the barley is off, it will thrive amain.

I must advise the farmer to see that he has good seed; and this he can know no other way but by trying it, by sowing some in his garden.

The method is very easy. Let him count off a certain number of seeds, suppose two hundred; and having prepared a bed, let these be scattered regularly on it.

He is then to observe how long they take coming up, and how many of the seeds miss; and by this he will be enabled to judge of the goodness of his clover-seed, and sow a quantity according to what the result of his experiment is.

I must note, however, that if the weather is very dry, it may be proper to shade the bed.

I am, GENTLEMEN,

Your humble servant,

Essex, 1764.

N. I.



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# Museum Rusticum, &c.

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For D E C E M B E R, 1764.

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V O L U M E the T H I R D.

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N U M B E R LXXIV.

*The Profit attending Arable and Pasture Land compared, as found by Experience, near Bury, in Suffolk.*

GENTLEMEN,

**T**HE following calculation of the different profit attending arable and pasture land in my neighbourhood, you may, perhaps, think worthy a place in your *Museum Rusticum*, &c. since it is not drawn up merely from fancy, but from the exact accounts I have kept of my own crops, and the information I have gained from several sensible farmers.

I take twenty acres, and suppose them an addition to a farm; but I should premise, such an one as will require some additional cattle to be kept for it, perhaps two horses: but a farm of fifty pounds *per annum* may be so circumstanced as to require no material standing expences extraordinary for such an addition, in which case the ploughings, &c. will not cost near what I have laid them at; but the fairest way is the supposition I have made. We reckon nothing is either got or lost by four shillings *per acre* for a clean earth.



*Calculation of the Expences and Profit of farming a ploughed or pasture Field of twenty Acres for nine Years, on a Supposition that it is not a Farm by itself, but an Addition to another of Fifty Pounds per Annum, the Soil wet, and a loose, woodcock, brick Earth on the Surface, for eighteen Inches deep, and under that a very good stiff Clay, improved by Land-draining.*

First Year, Fallow.

	<i>l.</i>	<i>s.</i>	<i>d.</i>
Rent charges - - - - -	15	0	0
First ploughing, a clean earth - - -	4	0	0
Second <i>ditto</i> , ribbling it close overwart - -	4	0	0
Harrowing it overwart - - - - -	0	5	0
Rolling - - - - -	0	3	0
Third ploughing, a roving - - - - -	2	10	0
Fourth <i>ditto</i> , a clean earth - - - - -	4	0	0
	<hr/>		
	29	18	0

Second Year, Barley.

Rent, &c. - - - - -	15	0	0
First ploughing, a clean earth - - -	4	0	0
Harrowing down the ridges - - - - -	0	5	0
Expences of mucking, at twenty loads <i>per</i> acre, and spreading the muck supposed to be at the farmer's house - - - - -	10	0	0
Second ploughing the sowing earth, as it may be done with a double-breasted plough, to shut up the barks; that and the harrowing - -	4	0	0
Seventeen coomb and two bushels of feed-barley, at eight shillings and six-pence <i>per</i> coomb -	7	8	9
Two bushels and a half of clover-feed, at twenty-five shillings <i>per</i> bushel - - -	3	2	6
Harrowing and water-furrowing - - -	0	10	0
Weeding - - - - -	1	0	0
Harvesting, two shillings and six-pence <i>per</i> acre	2	10	0
Threshing, one hundred and sixty coomb, at six-pence <i>per</i> coomb - - - - -	4	0	0
	<hr/>		
	51	16	3

Carrying

	<i>l.</i>	<i>s.</i>	<i>d.</i>
Brought over	51	16	3
Carrying out one hundred and sixty coomb, at eight times, eight pounds; but as back carriage may sometimes be got, say	-	-	-
Expences eight times at market	-	-	-
	5	0	0
	1	10	0
	58	6	3

## Third Year, Clover.

Rent, &c.	-	-	-	-	-	15	0	0
Cutting twenty acres, and harvesting it	-	-	-	-	-	3	0	0
Threshing thirty-two bushels of clover-feed, at four shillings <i>per</i> bushel	-	-	-	-	-	6	8	0
Expences of carrying the feed out, and at market	-	-	-	-	-	1	15	0
Weeding the clover	-	-	-	-	-	0	10	0
						26	13	0

## Fourth Year, Wheat.

Rent, &c.	-	-	-	-	-	-	15	0	0
Ploughing, harrowing, and water-furrowing the clover-land, and sowing the wheat, five shillings and six-pence <i>per</i> acre	-	-	-	-	-	-	5	10	0
Ten coomb of seed	-	-	-	-	-	-	8	0	0
Weeding	-	-	-	-	-	-	1	10	0
Harvesting, including all expences, five shillings <i>per</i> acre	-	-	-	-	-	-	5	0	0
Threshing one hundred coomb	-	-	-	-	-	-	5	0	0
Carrying out <i>ditto</i> , at five goings, back carriage three of them, and at market	-	-	-	-	-	-	3	0	0
Haulming, at one shilling and six-pence	-	-	-	-	-	-	1	10	0
							44	10	0

## Fifth Year, Fallow.

Rent, &c.	-	-	-	-	-	-	15	0	0
Expences the same as the first year	-	-	-	-	-	-	14	18	0
							29	18	0



## Sixth Year, Wheat.

	<i>l.</i>	<i>s.</i>	<i>d.</i>
Rent, &c. - - - - -	15	0	0
Mucking, the materials supposed to be in the farmer's yard - - - - -	10	0	0
Ten coomb of seed blew-chaff wheat - -	7	0	0
Sowing earth - - - - -	4	0	0
Weeding - - - - -	2	0	0
Harvesting - - - - -	5	0	0
Threshing one hundred and twenty coomb, at one shilling and two-pence <i>per</i> coomb - -	7	0	0
Carrying out <i>ditto</i> , at six times, as before -	5	0	0
	45	0	0

## Seventh Year, White Oats.

Rent, &c. - - - - -	15	0	0
First ploughing, a clean earth - - -	4	0	0
Water-furrowing - - - - -	0	5	0
Second ploughing, a clean earth - - -	4	0	0
Water-furrowing - - - - -	0	3	0
Third ploughing, fowing earth, and harrowing	5	0	0
Twenty coomb of seed - - - - -	8	0	0
Weeding - - - - -	0	10	0
Harvesting, two shillings and six-pence <i>per</i> acre	2	10	0
Threshing one hundred and twenty coomb -	3	0	0
Carrying out six times, and marketing - -	3	18	0
	46	6	0

## Eighth Year, Tares and Turneps.

Rent, &c. - - - - -	15	0	0
One clean earth, and harrowing ten acres for tares, and water-furrowing, and rolling -	2	10	0
Five coomb of seed-tares - - - - -	2	10	0
Cutting, making, loading, and stacking of fifteen loads of tare fodder - - - - -	2	0	0
Ploughing up the tare land, a clean earth -	2	0	0
Overwarting another clean earth - - - -	2	0	0
	26	0	0

Roving

	<i>l.</i>	<i>s.</i>	<i>d.</i>
Brought over	26	0	0
Roving it - - - - -	1	5	0
First ploughing for turneps, ten acres, a clean earth - - - - -	2	0	0
Second ploughing, drawing the ridges into barks	1	0	0
Third ploughing, ribbling it overwart - -	1	10	0
Harrowing it flat - - - - -	0	2	6
Fourth ploughing, a clean earth; draw it on to the steach - - - - -	2	0	0
Fifth ploughing, sowing earth, up-set it, and harrowing - - - - -	2	5	0
Turnep-feed - - - - -	0	5	0
First hoeing, at four shillings <i>per</i> acre - -	2	0	0
Second <i>ditto</i> , at two shillings and six-pence -	1	5	0
	<hr/>	<hr/>	<hr/>
	39	12	6

## Ninth Year, Wheat and Barley.

Rent, &c. - - - - -	15	0	0
Ploughing and sowing the tare-land with wheat, water-furrowing, &c. - - - - -	2	10	0
Five coomb of seed red-stalked wheat - -	4	0	0
Weeding - - - - -	0	15	0
Harvesting - - - - -	2	10	0
Haulming - - - - -	0	15	0
Threshing sixty coomb - - - - -	3	0	0
Carrying out <i>ditto</i> , &c. - - - - -	2	10	0
Ploughing and sowing the turnep-land with barley, harrowing, rolling, and water-furrowing -	2	10	0
Eight coomb of seed patney barley - - -	3	4	0
Weeding - - - - -	0	2	6
Harvesting - - - - -	1	5	0
Threshing seventy coomb - - - - -	1	15	0
Carrying out seventy coomb - - - - -	1	10	0
	<hr/>	<hr/>	<hr/>
	41	6	6

PRODUCE.



## P R O D U C E.

## First Year.

l. s. d.

Sheep-feed worth	-	-	-	-	-	1	10	0
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## Second Year.

One hundred and fixty coomb of barley, at eight

shillings <i>per</i> coomb	-	-	-	-	64	0	0
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Shack for cattle	-	-	-	-	2	0	0
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					<u>66</u>	0	0
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## Third Year.

Feed of clover before it is feeded	-	-	-	-	20	0	0
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Thirty-two bushels of clover-feed, at one pound

five shillings <i>per</i> bushel	-	-	-	-	40	0	0
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Feed after feed	-	-	-	-	2	0	0
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					<u>62</u>	0	0
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## Fourth Year.

One hundred coomb of wheat, at fifteen shil-

lings <i>per</i> coomb	-	-	-	-	75	0	0
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Shack for cattle	-	-	-	-	1	10	0
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					<u>76</u>	10	0
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## Fifth Year.

Sheep-feed	-	-	-	-	1	10	0
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## Sixth Year.

One hundred and twenty coomb of wheat, at

fourteen shillings <i>per</i> coomb	-	-	-	-	84	0	0
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Shack for cattle	-	-	-	-	1	10	0
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					<u>85</u>	10	0
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## Seventh Year.

One hundred and twenty coomb of white oats,

at eight shillings <i>per</i> coomb	-	-	-	-	48	0	0
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Shack for cattle	-	-	-	-	2	0	0
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					<u>50</u>	0	0
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## Eighth Year.

l. s. d.

Fifteen load of tares	-	-	-	-	-	15	0	0
Ten acres of turneps to buy cattle in, and fatten on them, to sell off in the spring, worth three pounds <i>per</i> acre	-	-	-	-	-	30	0	0
						<u>45</u>	0	0

## Ninth Year.

Sixty coomb of wheat, at fourteen shillings and six-pence <i>per</i> coomb	-	-	-	-	-	87	0	0
Shack	-	-	-	-	-	0	15	0
Seventy coomb of barley, at seven shillings and six-pence <i>per</i> coomb	-	-	-	-	-	26	5	0
Shack	-	-	-	-	-	1	0	0
						<u>115</u>	0	0

## First Year.

l. s. d.

Expences	-	-	29	18	0
Produce	-	-	1	10	0
Loss	-	-	28	8	0

## Sixth Year.

l. s. d.

Produce	-	-	85	10	0
Expences	-	-	45	0	0
Profit	-	-	40	10	0

## Second Year.

Produce	-	-	66	0	0
Expences	-	-	58	6	3
Profit	-	-	7	13	9

## Seventh Year.

Produce	-	-	50	0	0
Expences	-	-	46	6	0
Profit	-	-	3	14	0

## Third Year.

Produce	-	-	62	0	0
Expences	-	-	26	13	0
Profit	-	-	35	7	0

## Eighth Year.

Produce	-	-	45	0	0
Expences	-	-	39	12	6
Profit	-	-	5	7	6

## Fourth Year.

Produce	-	-	76	10	0
Expences	-	-	44	10	0
Profit	-	-	32	0	0

## Ninth Year.

Produce	-	-	115	0	0
Expences	-	-	41	6	6
Profit	-	-	73	13	6

## Fifth Year.

Expences	-	-	29	18	0
Produce	-	-	1	10	0
Loss	-	-	28	8	0

Profit



Profit.			Loss.		
	<i>l.</i>	<i>s.</i>	<i>d.</i>		<i>l.</i> <i>s.</i> <i>d.</i>
2d Year	-	7	13 9	1st Year	- 28 8 0
3d Year	-	35	7 0	5th Year	- 28 8 0
4th Year	-	32	0 0	Loss of 2 Years	<u>56 16 0</u>
6th Year	-	40	10 0		
7th Year	-	3	14 0		
8th Year	-	5	7 6		
9th Year	-	73	13 6		
Profit of 7 Years	198	5	9		
		56	16 0		
	<u>141</u>	<u>9</u>	<u>9</u>	Total profit in 9 years;	

Which is fifteen pounds fourteen shillings and eight-pence *per annum*, or rather better than fifteen shillings *per acre* \*.

But I should observe, that as a crop of clover-seed is the most uncertain and various of any that is grown, I have reckoned less for it by far than multitudes produce, though, at the same time, many bring nothing at all.

I know a field of twenty acres, which I have been often told by several who knew the crop, once produced the farmer five bushels *per acre*. It was all down on a Friday, and the farmer suspecting a change of weather, by great rewards to his workmen, and bringing casks of ale into the field, and feeding them well, tempted them to work in an extraordinary manner all the Saturday, and cleared the whole into barn. It began raining in the night, and so much succeeding bad weather came, that the crops were, in general, greatly damaged. His produced, as I said, one hundred bushels, all which he sold at three pounds ten shillings *per bushel*, arising to three hundred and fifty pounds. And a few years ago I saw the same field with a crop of clover, which did not produce twenty pecks, and that so wretched as to fetch nothing.

I read

\* Nothing is reckoned for the straw, as it is supposed to be made into the muck.

I read this calculation to a farmer, and he observed, that I should reckon eighty bushels for the crop; and as it is often grown, I will give you another total, with that alteration, that your readers may adopt either, according to their idea of the chance.

	l.	s.	d.
Profit	248	13	9
Loss	56	16	0
	191	17	9

which is twenty-one pounds six shillings and five-pence *per annum*, or better than a guinea *per acre*.

As I gave you, in one of my last letters, the course of the crops hereabouts, and which differs from the above account, I should observe to you, that I then supposed a good coat of manure to be laid on every other year: without such an assistance, those crops would be too much for such land as our's.

As I mention back carriage in this calculation, I will explain my meaning. We generally carry our corn to Ipswich, Manningtree, or Thetford, from which places we load home with coals for blacksmiths, or any persons that want them, who pay us eighteen shillings for the carriage of a loading, twelve shillings *per chaldron*, and we generally bring one and a half. But as we may accidentally carry our corn where none is to be had, I make such allowances as to bring it near the truth.

*Calculation of nine Years Expences and Profit of twenty Acres of Grass-Land, the Soil supposed to be the same as the above Arable Land, with no other Difference than being Grass or Ploughed.*

First Year's Expences.			l.	s.	d.
	l.	s.	d.		
Rent, &c.	15	0	0		
Mowing, making					
and cocking ten					
				1	10 0
				16	10 0



	<i>l.</i>	<i>s.</i>	<i>d.</i>		<i>l.</i>	<i>s.</i>	<i>d.</i>
Brought over	16	10	0	brought from			
Stacking, loading, &c. of ten loads				Bury; six wag-			
of hay - - -	1	10	0	gon loads, at			
Expences on four				eleven shillings			
goings of hay				and six-pence			
when it is sold,				per load - - -	3	9	0
weighing, and				Expences of car-			
market - - -	0	16	0	rying it on, and			
N. B. Nothing				spreading, &c.	1	8	0
is reckoned for				Turning and mix-			
carriage as ma-				ing manure - -	0	4	0
nure is brought							
back.							
Fifteen old crones,							
bought in Au-							
gust - - -	3	15	0				
Expences in buy-							
ing sheep - - -	0	4	0				
Three cows at five							
pounds each - -	15	0	0				
A sow, and ten							
pigs three weeks							
old - - -	2	12	6				
Supposing two							
acres to be ma-							
nured each year							
with twenty-six							
loads per acre,							
Forty loads of clay,							
at two-pence							
half-penny per							
load - - -	0	8	4				
Twelve ditto of							
ashes, mortar,							
or rotten dung,							

45 16 10

## Second Year.

Rent, &c. - - -	15	0	0
Mowing, making, &c. of six acres			
of grafs - - -	0	18	0
Stacking, &c. six			
loads of hay - -	0	18	0
Weighing, mar-			
keting, &c. - - -	0	10	0
Expences of buy-			
ing sheep - - -	0	1	6
A score of old			
crones - - -	6	0	0
Manuring two a-			
crees as above	5	9	4
	28	16	10

## Third Year.

Rent, &c. - - -	15	0	0
Mowing and ma-			
king, &c. eight			
acres of grafs,			
at three shil-			
lings per acre	1	4	0
	16	4	0

at

	<i>l.</i>	<i>s.</i>	<i>d.</i>		<i>l.</i>	<i>s.</i>	<i>d.</i>
Brought over	16	4	0	Expences on cat-			
Stacking, &c. -	1	4	0	tle - - -	0	3	10
Weighing and				Fifteen crones -	3	7	6
marketing, &c. -	0	12	0	Manuring two a-			
Expences on cat-				cles as above	<u>5</u>	<u>9</u>	<u>4</u>
tle, - - -	0	2	0		27	15	10
Fifteen crones -	3	15	0				
Manuring two a-							
cles as above	<u>5</u>	<u>9</u>	<u>4</u>				
	27	6	4				

## Fourth Year.

Rent, &c. - -	15	0	0
Mowing and ma-			
king twelve			
acres, at three			
shillings <i>per</i>			
acre - - -	1	16	0
Stacking, &c. -	1	16	0
Weighing and			
marketing -	0	18	0
Expences on cat-			
tle - - -	0	5	0
Fifteen crones -	4	0	0
Manuring two a-			
cles as above	<u>5</u>	<u>9</u>	<u>4</u>
	29	4	4

## Fifth Year.

Rent, &c. - -	15	0	0
Mowing and ma-			
king ten acres	1	10	0
Stacking, &c. -	1	10	0
Weighing and			
marketing -	0	16	0

## Sixth Year.

Rent, &c. - -	15	0	0
Mowing and ma-			
king nine acres	1	7	0
Stacking, &c. -	1	7	0
Weighing, &c. -	0	14	0
Expences on cat-			
tle - - -	0	4	0
Fifteen crones -	4	5	0
Manuring two a-			
cles as above	<u>5</u>	<u>9</u>	<u>4</u>
	28	6	4

## Seventh Year.

Rent, &c. - -	15	0	0
Mowing and ma-			
king twelve			
acres - - -	1	16	0
Stacking, &c. -	1	16	0
Weighing, &c. -	0	18	0
Twenty crones	5	0	0
Expences on cat-			
tle - - -	0	5	0

Manuring two a-			
cles as above	<u>5</u>	<u>9</u>	<u>4</u>
	30	4	4

## Eighth Year.

Rent, &c. - -	15	0	0
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U u 2

Mowing



l. s. d.      Ninth Year.

Brought over	15	0	0				l. s. d.
Mowing and making eight acres	1	4	0	Rent, &c.	15	0	0
Stacking, &c.	1	4	0	Mowing and making ten acres	1	10	0
Weighing, &c.	0	10	0	Stacking, &c.	1	10	0
Twenty crones	2	5	10	Weighing, &c.	0	8	0
Expences	0	7	0	Twenty crones	3	15	0
Manuring two acres as above	5	9	4	Expences on cattle	0	10	0
							<hr/>
							22 13 0

### P R O D U C E.

First Year.

l. s. d.

Ten loads of hay, waisted to eight, and sold in the winter at two pounds per load	16	0	0
Fifteen old crones fold fat, with their lambs, at fifteen shillings per couple	11	5	0
As no expences are calculated for the dairy, such as wood, utensils, &c. I shall lay the clear profit of the cows at four pounds each, which is what I have generally made of mine, every thing paid, and yet kept a calf now and then for stock: one I reckon this year	12	0	0
I shall not explain all the method of managing the hogs, but lay the clear profit of a sow at different sums, such as I have generally found my own produce	6	0	0
			<hr/>
	45	5	0

Second Year.

Eight loads of hay waisted to seven, and sold at two pounds per load	14	0	0
Twenty crones, fold fat at seventeen shillings per couple	17	0	0
Three cows, at four pounds each	12	0	0
One sow	6	5	0
			<hr/>
	49	5	0

Third

## Third Year.

l. s. d.

Ten loads of hay, waisted to eight, sold at two pounds per load	16	0	0
Fifteen crones, sold at fifteen shillings per couple	11	5	0
Four cows, the new one at three pounds (the calf is now a cow)	15	0	0
One sow	6	10	0
	<u>48</u>	<u>15</u>	<u>0</u>

## Fourth Year.

Fourteen loads of hay waisted to twelve	24	0	0
Fifteen crones, sold per couple at fifteen shillings	11	5	0
Four cows, the new one three pounds five shillings	15	5	0
One sow	7	0	0
	<u>57</u>	<u>10</u>	<u>0</u>

## Fifth Year.

Twelve loads of hay, waisted to ten	20	0	0
Fifteen crones, sold per couple at sixteen shillings	12	0	0
Four cows, the new one at three pounds ten shillings	15	10	0
One sow	5	0	0
	<u>52</u>	<u>10</u>	<u>0</u>

## Sixth Year.

Ten loads of hay, waisted to eight	16	0	0
Fifteen crones, sold per couple at sixteen shillings	12	0	0
Four cows	16	0	0
One sow	7	10	0
	<u>51</u>	<u>10</u>	<u>0</u>

## Seventh Year.

Fourteen loads of hay, waisted to twelve	24	0	0
Twenty crones, sold per couple at seventeen shillings	17	0	0
Four cows	16	0	0
One sow	5	0	0
	<u>62</u>	<u>0</u>	<u>0</u>

## Eighth



## Eighth Year.

l. s. d.

Twelve loads of hay, waisted to ten	-	-	20	0	0
Twenty crones, sold <i>per</i> couple at sixteen shillings	16	0	0		
Four cows	-	-	16	0	0
One sow	-	-	5	15	0
			<u>57</u>	<u>15</u>	<u>0</u>

## Ninth Year.

Twelve loads of hay, waisted to ten	-	-	20	0	0
Twenty crones, sold <i>per</i> couple at fourteen shillings	-	-	14	0	0
Four cows	-	-	16	0	0
One sow	-	-	7	0	0
			<u>57</u>	<u>0</u>	<u>0</u>

## Expences.

## Produce.

	l.	s.	d.		l.	s.	d.
1st Year - -	45	16	10	1st Year - -	45	5	0
2d Year - -	28	16	10	2d Year - -	49	5	0
3d Year - -	27	6	4	3d Year - -	48	15	0
4th Year - -	29	4	4	4th Year - -	57	10	0
5th Year - -	27	15	10	5th Year - -	52	10	0
6th Year - -	28	6	4	6th Year - -	51	10	0
7th Year - -	30	4	4	7th Year - -	62	0	0
8th Year - -	29	4	4	8th Year - -	57	15	0
9th Year - -	22	13	0	9th Year - -	57	0	0
	<u>269</u>	<u>8</u>	<u>2</u>		<u>481</u>	<u>10</u>	<u>0</u>
					<u>269</u>	<u>8</u>	<u>2</u>
					<u>212</u>	<u>1</u>	<u>10</u>

Which is twenty-three pounds eleven shillings and two-pence *per annum*; or one pound three shillings *per* acre profit.

The above account, gentlemen, displays the vastly superior advantages of grafs, with us, to arable land.

You will certainly remark, that nothing in the above account is reckoned for losses of stock; but in answer to that I should observe, that nothing is calculated in the  
arable



arable account for some bad years, when in such land not a quarter of a crop is produced: and I do not mean this calculation as perfect, (that is impossible) but only to discover the *proportion* between the one method and the other; and from what I have observed, and gathered from the information which the most intelligent farmers can give me, I am clearly of opinion, that the chances, on the whole, are much in favour of the grass-land, the crop of hay and feed being much more regular than those of corn, clover, or turneps; and supposing the eighty bushels of clover-seed, yet the grass profit far exceeds the arable, even then; but, as I observed, the probability lies against the latter, supposing the profit to be only fifteen pounds fourteen shillings and eight-pence *per annum*.

I may remind you, that I supposed this twenty acres to be an addition to a farm, not one by itself, and so compared the respective profits; therefore I have not allowed any thing for the feed which the above-mentioned cattle may accidentally have on the arable land, or turneps which they may expend in the winter; and for this reason, because, although it appears to me that grass is the most profitable husbandry, yet a certain quantity of ploughed land should undoubtedly be a part of every grass farm, for the raising turneps, some artificial grass, and stover enough for the winter's food.

I hope your readers will peruse this calculation with candour, and believe me, when I assure them it is the nearest the truth of any I can make, either from my own experience, or best information. If any doubts or objections are made to it, I shall be ready, in a future Number, to explain my meaning more precisely.

The three last years I could have reckoned two steers fed on the grass ready for turneps in the winter, and in some other articles I have underlaid the matter, I am certain, greatly, lest the want of winter stover should be an objection.

I reckon the hay all sold at forty shillings; whereas it is scarce ever in nine years less than that, and frequently fifty or sixty shillings: but I think no objection can be made



made in this respect, as when I calculate the profit of the grass-land I have at present, I never think of doing it otherwise than in the manner above, as such is the profit arising from my having such a quantity of grass; and which I could not make of any ploughed land without the grass. If all my arable fields were employed in growing stover for a very large quantity of grass, the profit would be five times as large as from raising corn in the common course of husbandry about us\*.

I am, GENTLEMEN,

Your constant reader,

Bradfield, near Bury,

Y.

Nov. 6, 1764.

P. S. I forgot some rollings of the pasture, at two-pence *per* acre.

## NUMBER LXXV.

*An Attempt to shew, that Mowing of Wheat is not of so great an Advantage to the Farmers of this Kingdom as some have supposed.*

GENTLEMEN,

**T**HE Old-fashioned Farmer will venture to attempt confuting the Rev. Mr. Comber.

How this gentleman should arrive at such a pitch of *experimental* knowledge as to think himself able to direct us farmers in the management of our business, I cannot guess; for the long letters which he sends forth amongst us, seem evidences of his not being well acquainted with the

\* We may venture to observe, that the corn, in the estimate of the profits of tillage, is valued at a low rate; but, perhaps, it was cheap when the valuation was fixed; and allowances may be made in any future estimate on this plan, which we recommend to the notice of our readers, as containing a comprehensive view of the comparative profits of the tillage-farmer and grazier. E. R.



the practical part of husbandry, as I could point out in many instances, not to mention his letter on raising of hedges.

I do not presume to set up for a director to farmers in general; because I know many, of whom I should be glad to learn; but as my rustic situation has led me into a train of observations founded upon facts, as such, I shall humbly submit them to the public.

I am indifferent whether the critic's frown, or his candid smile, be the fate of my letters. Permit me therefore to offer my sentiments in defence of truth, which the holy scriptures tell me overcomes all things; and it is with this mighty weapon that I intend to lay low the introducers of errors in husbandry. As to boasting of my impartiality, or fitness for this task, that I shall avoid, and immediately proceed to shew, that the mowing of wheat (which Mr. Comber strives to defend) is of no real benefit, or advantage, to the farmers of this island.

The mowing of wheat, instead of shortening our harvest, (as Mr. Comber intimates) on the contrary, lengthens it; so that the trifle of time which is gained by mowing it quicker than the same number of hands can reap it, is all lost by the mowed corn requiring to stand so much longer in the field than that which is reaped does; because he that mows, cuts up more grass and weeds; consequently it will require to be many more days out, before it is fit to carry, than that which is reaped, because in reaping we cut it off above the grass; and if any thistles, or large weeds, happen to be amongst it, we leave them standing; whereas the mower cuts all down before him, and cannot avoid cutting nearer the ground than we chuse to reap; for which reason, that wheat which is mowed will require many days of hot weather to wilt the grass and weeds, whilst that which is reaped will often be fit to carry the next day: thus, by our old-fashioned method of reaping, we can have our wheat in our barns, or upon our ricks, safe and secure, whilst the new-



fashioned mowers must have their's exposed to the hazard of uncertain weather.

Besides, that wheat which is mowed is one third longer in the straw than we chuse to reap it, and in consequence so much more time and trouble attends the carrying of it; and if it is to be housed, so much more room will it take, and so much more straw will the thresher have to beat over; all which inconveniencies are avoided by our sticking close to our old-fashioned neat and safe method of reaping; therefore the new-fangled method of mowing wheat, ought not to be propagated amongst us.

As to all objections that may be used against our leaving so much stubble, I shall offer the following as an answer.

We mow our stubble when most convenient, and make use of it to thatch our buildings, it being much better than straw for that purpose, as it is sure to be free from having any corn to grow out of it; and, as it is not bruised by the flail, it shoots off the wet better, and will endure much longer than that straw which is bruised, or has ears to it.

If we do not want it for that purpose, it then serves us to litter our yards, and answers all our ends as well as if we had housed it, and been at ever so much extraordinary expence about it: therefore the old-fashioned method is preferable to the new; and whether it ought to be followed or not, I will leave every sensible man to judge for himself.

The reason why people give great wages in harvest, is to encourage men to work more hours, and brisker than common: on this account therefore we provide some *good old stings* to raise our men's spirits; and, if we are free with it, we never need fear wanting labourers, who will be always eager to assist the best masters first, and then the others will come in their turns: and it is our desire of being thus nimble with our harvests, and at the same time free with our money and liquor, that makes men come out of countries which are late with their harvest  
into

into others, which are earlier, and not because one county cannot cut down their corn with their own hands.

The Shropshire, Staffordshire, and Cheshire men come into this county to help us, being encouraged thereto by the great wages we give for a few days, whilst the cutting of our wheat lasts, and return time enough to help their neighbours.

Our men go from hence to Cambridgehire, and other forward counties, and return time enough to assist us; and thus, by the mutual assistance which is given, farmers are enabled to fall their wheat in much less time than they otherwise could; and if we set such bargains that men get three or four shillings a day, and their drink, much good may it do them; they work many hours for it, and very hard, therefore deserve what they earn.

I could go on upon this subject till I should tire myself with writing, and others with reading, the many proofs that might be brought to confirm farmers in their old method of reaping; but to make use of Mr. Comber's own words, his suggestions are sufficiently answered, "so far as they can be thought by any sober man to deserve notice."

What Mr. Comber mentions in relation to the vile practice which the gleaners of corn make use of in his neighbourhood, must be owing to some innate principle of vice which they are subject to; or, perhaps, their teachers do not shew them the necessity of doing justice to all men.

We trust our labourers wives and children to glean after their husbands, or parents, even before our corn is carried, and seldom find ourselves, in the least, injured by it: therefore we shall scarcely think of altering our good and safe method of reaping, for a slovenly, unsafe, and more expensive one of mowing, which is like to be less practised hereabouts than it used to be; for we begin to reap both oats and beans, and find that we save greatly by so doing, and I doubt not but we shall soon do the same by our strong crops of barley: and this method I will defend against all opposers; for if they have pens equal to a



Pope, or a Churchill, yet it is out of the power even of such to overcome truth, although, I own, they may raise a great dust against the defenders of it.

I am, GENTLEMEN,  
 Warwickshire, THE OLD-FASHIONED FARMER.  
 Nov. 16, 1764.

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## NUMBER LXXVI.

*Some Objections to Mowing of Wheat, particularly in Swarth; a good Way of manuring Land recommended; with a Method of weeding Beans, by turning Sheep on them.*

GENTLEMEN,

YOUR Northampton correspondent, page 235, of your First Volume, who signs himself A. B. has given so clear an account of the method of mowing beans *in swarth*, as practised in the Vale of Aylesbury, that it is quite needless to say any more upon that subject; but your desire of being fully informed as to that particular seeming to be introductory to the mowing of wheat, I will give you my opinion upon that, and I have consulted some good sensible farmers, who are of the same opinion with me.

Different countries have different customs and methods of husbandry, which they follow for very good and sufficient reasons, peculiar to their own respective soils and situations; but it is very proper to know how other countries manage their husbandry affairs, that every one may be able to introduce what is reasonable and practicable in his situation, into his own business. Your *Museum* is the only channel of communicating such knowledge all over the kingdom.

As to mowing wheat *in swarth*, I think it will litter about very much, for beans do so; so that the gatherer, who follows the mower, must have a good and quick hand to lay the wheat in any tolerable order for binding soon enough to get out of the way of the next mower. Children can never do this work; and women, and such as are

fit for it, may be more advantageously employed in reaping. But if wheat must be mowed, I think that the Hertfordshire scythe and cradle would perform better than the Hainault scythe, especially if, instead of the long blade which they use in Hertfordshire, they were to use a short blade, such as they mow walks in gardens with, which is about thirty-three inches long.

Should it happen to rain soon after the wheat is mowed, it would be very improper to tie it up into sheaves whilst it is wet; and if it be left on the ground, as there will be no stubble to keep it hollow, it will be apt to sprout, or grow, as some call it, in a very short time.

Another objection against mowing wheat is, because, by cutting it so very near the ground, there will be more loads to carry home, and it will take up so much more barn-room than when it is reaped high; both which, as trifling as they may appear to some, are valuable considerations when men lie at high harvest-wages, and when all work requires to be done with the greatest expedition, and the grain is, perhaps, to be fetched above two miles, as is usual in common fields.

The difference may be computed thus: I make the estimate according to the crops which we usually have in the common fields in the neighbourhood where my affairs lie\*: most people know that common field computed acres seldom hold out measure. Upon one of our computed acres we may reasonably expect about forty shocks of wheat, at ten sheaves to a shock (though, by the bye, we had not above twenty-three or twenty-four such shocks last year).

Twenty of these shocks make a fair harvest-load: two of these acres, if the wheat is reaped high, will give a good load of haulm; so that, if you reap your wheat high, you may carry two acres at four loads; if you mow  
it,

\* We could wish our correspondent had told us in what part of the kingdom he lives: this omission often renders the meaning of the writer obscure. We imagine it is in Buckinghamshire, however, as the post-mark on his letter was Fenny-Stratford. E.



it, there will be five loads on the two acres, so that by reaping high you have one fifth less carriage, the same less barn room taken up, and the same less straw to thrash, out of which you have no wheat at all.

When harvest is done, the stubble may be got up at one shilling *per* acre, which is the common price: this is called pecking the haulm, from the method of performing the work; and it may be carried home at leisure.

Long haulm is better for thatching than straw. In the lower part of Bedfordshire, north of the river Ouse, and in Northamptonshire, they always use haulm to thatch; and I never saw thatch lie so smooth and well in any other country; and it also lasts the longest. It is certainly a very slovenly way to leave the haulm, and plough it in; for, as you rightly observe in your note, page 19, Vol. I. it always spoils the next crop, for the reasons there mentioned; and it always must do so in common fields, because wheat is succeeded by beans or peas, without ploughing the land till they are sowed.

Another very great objection against mowing wheat, or even reaping it low, is this: the weeds, which must necessarily be gathered up in the but-ends of the sheaves, will ferment, and give the wheat a bad colour and disagreeable taste, especially if there happens to be any quantity of melilot, which is a weed that grows very plentifully in some fields, and is so nauseous that a person must be hungry indeed who can eat the bread that is made of wheat tainted with this herb. Notwithstanding what W. H. says in his letter, page 158, Vol. I. the weeds will not always shake out of the sheaves; therefore, for the reasons above mentioned, I am for reaping wheat as high as possible, consistent with making clean work.

I should now conclude; but you will give me leave first to mention a piece of good husbandry, which is practised by some people with success, and is approved of by all, but as yet followed by few, though I have seen more of it this year than ever I did before; and that is this:

The first opportunity, after the haulm is brought home, they carry out their dung, and lay it upon the land  
where

where the wheat grew last harvest, and spread it forthwith. There is a certainty of a good crop of beans or peas next year, and the land will be more clean from weeds than where the dung is laid upon the fallow lands.

To this add another good piece of husbandry, and that is, as soon as the beans have got six leaves, turn your sheep to feed among them; they will eat up all the young weeds, even the melilot, but will not eat the beans: you may keep the sheep every day among the beans till they are upon blossom; but they must be kept moving gently about, and not suffered to lie down\*.

I am,

Nov. 27. Your most obedient, humble servant,  
1764. J. L.

## NUMBER LXXVII.

*A Letter to the Editors, proposing a Plan for communicating the Knowledge of good Practices in Husbandry, through the various Parts of the British Dominions.*

GENTLEMEN,

I AM a constant reader of your *Museum*, by which I have profited, and so must every one (even the most knowing) that is any way concerned in agriculture.

It is very rightly observed by some of your correspondents, that *gentlemen* must set the example in improvements, and that they ought to have an eye to the business of farming themselves, and not trust entirely to bailiffs and servants. I make no doubt but your work will be the means of inducing many gentlemen of fortune to be farmers themselves, for the sake of making improvements and experiments for their own and the public good, who at present know little or nothing of the most common methods

\* This gentleman's future correspondence will be acceptable. E.



methods or practices of husbandry; and to such as these it would be extremely useful (which is the chief reason of my troubling you with this letter) if some of the most intelligent of your numerous correspondents in each corn county, or at least in such parts of England where agriculture is arrived to the most perfection, would, through the channel of your *Museum*, favour the public with a short system of the common and ordinary methods of husbandry in their respective countries, with regard to the cultivation of *arable lands*—I mean the round or course of husbandry from the growing of a wheat-crop until the wheat-crop comes to be sowed again, for the benefit of novices in husbandry, distinguishing the several intermediate crops of barley, oats, beans, peas, vetches, turneps, grass-seeds, &c. the times and method of sowing, hoeing, weeding, and cultivating the same; the methods and times of ploughing and fallowing; the different manures made use of, and the times of laying them on; and what corn, grain, pulse, roots or grasses, best succeed each other, &c. &c.

This may all be done in a few pages; and when gentlemen are possessed of such a short, though general system of farming in the common and ordinary methods, which may properly enough be called the rudiments of agriculture, they will be enabled to receive instructions for improvements and refinements.

Besides, those who are already acquainted with the ordinary methods of husbandry in their own countries, will by this means reap the advantage of seeing the different methods in other countries, which may open a field of knowledge not yet sufficiently considered.

I hope some of your public-spirited correspondents will take the hint; and I assure you I will contribute my mite \* towards promoting your good design, by communicating

\* We approve much of our correspondent's plan, and shall be greatly obliged to him if he will set the example, by sending us an account of the best methods of husbandry used in Wiltshire. E.

indicating to the public what little knowledge I may be able to pick up from the intelligent practical farmer, and remain,

GENTLEMEN,

Your most humble servant,

Wiltshire, Nov. 20, 1764.

C. B.

P. S. I shall in particular send you, at my leisure, an approved receipt for preventing the smut in wheat by an easy preparation of the seed, as practised with undoubted success for a great number of years\*.

## NUMBER LXXVIII.

*The Advantages of Tillage superior to those arising from Dung, illustrated by an Account of a Series of Experiments made on the same Field, for twenty-two or twenty-three Years, in which Space of Time nineteen or twenty Crops of Wheat have been got, by practising Mr. Tull's Method of Husbandry.*

GENTLEMEN,

**Y**OUR correspondent Y X, Numb. XXVIII. of this Volume, proposes some queries relating to manures and tillage, and quotes the author of a small publication in 1762, who, he says, with seeming propriety ridicules the notion of our modern improvers, that tillage is superior to manure. The ingenious author of the late Essays on Husbandry is also of opinion, that manure is necessary for corn in the best soils, and that all arable lands ought to be fallowed every third year.

That manures are sometimes necessary, and in many cases very beneficial, is certainly true; and where they can be had at a less expence than the necessary additional tillage, it may be the farmers interest to use them: but, in many places, tillage is cheaper than manure; and to

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Y y

magnify

\* The receipt above mentioned will be particularly acceptable. E. O.



magnify the advantages of manure for corn, is more prejudicial to farmers so situated, than persuading them to a better tillage of their lands: for the point to be considered is not, whether manures or tillage produce the largest crops, but which of them is, upon the whole, the most profitable husbandry.

It is observable, that those who insist upon the necessity of manure and fallowing for corn, found their arguments upon the practice of the common husbandry, in which it is not denied that they are necessary; but this necessity, even in that husbandry, arises, in a great measure, from a circumstance which they do not usually take notice of, *viz. over cropping.*

This is unavoidable in the common husbandry, where manures, and particularly dung, are substituted in the room of tillage; for if the land is sown thick with corn to keep down the weeds, or if sown thin, and the weeds grow, in both cases it is filled with, at least, triple the number of plants necessary to produce a crop. The same happens the second, and every year it is sown with corn. This is a known fact; it is universal, and cannot be prevented in this husbandry. The consequence is evident; the land is exhausted by a great number of unnecessary plants, and gets out of tilth, because it cannot be hoed; and hence the necessity of manure and fallowing.

But the author of the Essays on Husbandry supposes, that manure is necessary even for horse-hoed crops of corn, and the best land; and in support of this opinion, he has mentioned a fact, which it is necessary to take notice of particularly, as it is an important one.

“ I am well informed,” says he, page 217, “ since  
 “ M. du Hamel published his last work, in 1761, that  
 “ M. de Chateauvieux found, by experience, that in  
 “ spite of all assistances from ploughing, without using  
 “ manures, he carried a visionary idea of Mr. Tull’s too far.  
 “ Of course he returned to the old practice, combining  
 “ one and the other, as before recommended; and, as  
 “ his fields had been thoroughly pulverized, and cleansed  
 “ from weeds, every spoonful of manure took effect, and  
 “ the produce of corn was very surprising.”

An account has been published of this gentleman's experiments, to the year 1756, at which time he had raised, upon some of his lands, five successive hoed crops of wheat, without manure: and it appears here, that he continued these crops in the same manner for five or six years longer. If he found it then necessary to use manure, the cause must be some difference in the tillage, or largeness of the crops, and not, as our author supposes, an imaginary idea of Tull's; because we have shewn in a former letter, (see page 162 of this Volume) that Mr. Tull himself continued his wheat crops for twelve years with success, and the twelfth crop was the best.

M. de Chateauvieux had not seen the last-published works of Mr. Tull, which contain several improvements in the hoeing culture; and being very curious in agriculture, he did not confine himself to a bare imitation; but, as our author admits, he tried various methods of hoeing his wheat, and in one respect, like other husbandmen, was still endeavouring to obtain greater crops: but so far we are certain, from his own account of his experiments, that his crops, raised nearest to Mr. Tull's method, were still improving to the year 1756; and he then declared himself fully convinced of the truth of the principles of the new husbandry.

There is no forming any certain judgment why this gentleman made use of manure at last, unless we had a detail of his experiments for the last five or six years. But, as our author takes notice, page 26, that he, “being  
“called of late to discharge his civil office in the republic,  
“has not been able to oblige us with a continued series  
“of his observations;” this, very probably, might be one reason of his adding manure, as he was sensible that his agriculture, in a new method, would not be carried on with that accuracy and success in his absence as under his own eye.

Our author seems to ground his opinion of the necessity of manure for horse-hoed corn upon this alteration in M. de Chateauvieux's practice; and probably many other persons may do the same, and be deterred from attempt-



ing a method of culture that is supposed to have failed, though under the direction of this most accurate and justly-celebrated husbandman.

In order therefore to shew, that the alteration in this gentleman's practice was not from any error in the principles of the new husbandry, I shall here produce an instance of horse-hoed wheat crops, continued without manure much longer than any hitherto mentioned.

These crops have been raised by a gentleman in Berkshire, who was acquainted with Mr. Tull. He has cultivated one field in this manner, about twenty-two or twenty-three years, and still continues to do so. In that time he has received from this field nineteen or twenty crops of wheat. One year it was fallowed, and two more was sown with peas and tares.

The reason of discontinuing the wheat crops in these years (which happened at different periods) was, that the soil of this field is of a very stiff, obstinate, binding quality, not the most proper for wheat, or the hoeing culture, otherwise than in respect to situation: and as it is very difficult to keep it in good tilth, if the critical seasons of hoeing it are missed, this happened to be the case in these years, and the owner then omitted to drill it with wheat, that he might bring it into better order for the next crop.

One part of this field has been several times dunged, and the other has had no dung, or other manure, during these twenty-three years. In all other respects, the whole has been cultivated in the same manner. Two rows of wheat, about ten inches apart, are drilled upon each ridge. The ridges are about the same breadth, and the horse-hoeings the same, as last directed by Mr. Tull. The usual quantity of seed is about three pecks to an acre of the white cone-wheat, with some mixture of red Lammas.

The crops have been various, as may be supposed, in a course of twenty-three years. In general, they have been nearly equal to the neighbouring sown crops, in the respective years, and in land of the same sort; from two to  
about

about four quarters *per* acre, nine-gallon measure; besides a saving of about two bushels of seed.

In 1763, the summer was uncommonly wet, and very unfavourable for horse-hoeing, especially of this sort of land. A trial was made of an acre of that crop, threshed by itself, which produced twenty-two bushels of clean wheat.

The effect of the dung laid upon part of this field, has been scarcely discernible in the crop; and a person who did not know where the dung was laid, could hardly distinguish it at harvest. This is very different from the effect of M. de Chateauxvieux's dressings: probably the difference might be from a different condition of the land and the manure. His land was finely pulverised by much ploughing and hoeing; and his manure seems to have been applied by way of a top-dressing, which is often more beneficial to corn than dung laid on in autumn. The soil of this field, being very stiff and binding, requires more tillage to pulverise it than lighter land: but the few hoeings given it are not sufficient to keep it in that perfect tilth that his lands seem to have been brought to.

The reason of this different culture is the different method of planting the wheat. When Mr. Tull planted three rows upon a ridge, he found six horse-hoeings necessary; but when only two rows were planted, he hoed but four times. This is the usual number of hoeings given to this field, and are, as we have seen, enough to support these repeated crops. If the intervals were much more hoed, the corn would grow too rank, and lodge: for so far are these crops from exhausting good land, as is commonly supposed, that, in fact, the main difficulty in managing these crops in such land is, to prevent their growing too luxuriant. It was for this reason that Mr. Tull, as he tells us, added a middle row, as an alloy to the other two, to prevent their growing too rank: and when he altered this, and planted only two rows, he abridged the number of hoeings from six to four.

The superior effect of tillage is here very evident; and this experiment is, I think, a full answer to the query made



made by your correspondent; for no assistance of dung will make ordinary land produce repeated crops of wheat, with the common tillage.

There is another very material advantage, which, I believe, may be derived from this circumstance of abating the number of hoeings, which would require too much room to explain it fully; but, in the mean time, I could not omit making this remarkable experiment known, when I found that an alteration in M. de Chateauvieux's practice was urged so strongly against this principle of the new husbandry, especially as the principle, though supported by arguments which seem to be very plain and conclusive, requires a long course of experiments to prove it from facts and real practice.

As I write this without the knowledge of the gentleman who has made the experiment, I do not think myself at liberty to mention his name; but if any gentleman, curious in agriculture, is desirous of more particular information, he shall be fully satisfied of the truth of what is here related.

Though the repetition of wheat crops may, in some cases, be only a matter of curiosity, yet, in many others, it will appear in a different light. Nor is this method limited to wheat, but may be very profitably extended to other plants, not commonly thought of; for the benefits of the new husbandry, in this and other respects, are as yet but imperfectly known.

Many of your readers will probably think, that the crops of this experiment were very small and inconsiderable; and they will hardly be persuaded to believe them very profitable. I intend to give some information in this matter \* to such of them as may be unacquainted with the  
new

\* As we are inclined to think that the drill and horse-hoe used by our correspondent's friend, are more simple in their construction than many which have been recommended to the notice of the public; and as they are evidently good, from their having been in such continual use for so many years; we should be glad of an opportunity of making them more known, by inserting an engraved representation of them in our work. E. O.

new husbandry; and in this I hope to be joined and assisted by your practical readers, particularly by your friend in Ireland, being of opinion with him, that it is the best and most profitable husbandry, and therefore wish to see it more generally practised.

I am, GENTLEMEN,

Middlesex,  
Nov. 15, 1764.

Your very humble servant,

E. S.

## N U M B E R LXXIX.

*An Account of the Practice and Rationale of Stabbing of hoked Beasts, from the Rev. Mr. Comber.*

GENTLEMEN,

AS your correspondent, An *Englishman*, resident in Ireland, calls, in the name of the public, upon such as are able to give an account of the operation of stabbing hoked beasts, a *safe* and *certain* remedy for a distemper without it very dangerous, I thought myself able to transmit a satisfactory relation of what is practised in this neighbourhood, with constant success, very frequently.

Though the operation itself is well known here to almost every farmer, yet I resolved not to content myself with an account of this, but to acquaint myself with the *rationale* of it, by conversing with an eminent chirurgeon in this neighbourhood, whose business, lying much among farmers, causes him to be well versed in all their proceedings anywise connected with physic and chirurgery; and whose education, completed in *Edinburgh*, in company with many men who now prescribe as physicians, and his own successful practice, renders his opinion unquestionable, at the same time that his communicativeness makes his conversation agreeable.

By his assistance, gentlemen, I am able to answer the enquiry of your correspondent and yourselves, as follows.

I. The *Englishman* is very right in his conjecture that the pen-knife is to be run into the part which he describes.

If



If he would be very accurate, he must direct it into the most prominent part, as he will, in that case, be in least danger of wounding improper parts.

II. He must take care that he have his pen-knife as sharp as possible; for it has not only the hide of the beast to pass through, but a very tough part of it, as is obvious to any one who barely knows the joints of a beast in the shambles.

III. There is no danger of wounding any large blood-vessels there, the parts being of a tough nature, insomuch that few people like to eat the flank, except of a *young* and *fat* beast.

IV. The paunch is wounded by the pen-knife, and a small orifice is sufficient to give vent to the confined air, without the help of any tube, as we know that the puncture of a pin will sink a full-blown bladder.

V. When the discharge of the wind is made, the parts of the paunch *collapse*, and the lips of the wound come in *contact*, and unite gradually by that *wonderful oeconomy of nature* which is known to subsist in the case of wounds in general.

VI. A plaister, which will stick around the edges, is to be applied to the wound in the hide, as soon as the discharge is made, to promote and secure the healing; and the beast is to be kept some time warm, and treated with gentleness.

It seems evident to me, that this operation must be a much better remedy than any injection by the syringe; because the tendency of all such injections being to rarefy the air still more, when the parts are much swollen already, there must be great danger of their bursting in a vital part. But of this, gentlemen, I leave physicians to judge, content to have given you, and *the Englishman*, such an account of the practice you enquire after as may be depended on.

I am, GENTLEMEN, as hitherto,

Yours, &c.

East-Newton,  
Oct. 23, 1764.

THO. COMBER, jun.

P. S. It is very remarkable that this letter appears to be written just one day after that on the same subject which you have already inserted. I was not in haste to send it to you, because I thought I might possibly *hear* or *learn* something more to the purpose in a little time; and I should, on the publication of the *Devonian's* letter, have suppressed this, had I not reflected, that the sending of similar accounts from very distant parts of the kingdom may contribute to bring into vogue a practice which seems *very salutary*, but is *too little known*. In this view of things you will probably think so short a letter as this to deserve a place in your collection. I have, indeed, another reason why I should not be unwilling to see this letter published, and which, I hope, you will think a generous one. I please myself with thinking, that the *Englishman*, seeing my readiness to oblige him, may be more willing in return to comply with that request in which I join you, gentlemen, *viz.* that he will send you *models* and *drawings* of his drill-plough, &c. to be communicated by your channel to the public. The new drill-plough of Mr. R. of York, seems as *complex* as any of its predecessors, and not to be sufficiently described by *drawings* or *words*, nor sufficiently tried to be depended upon: so that the hopes of those who wish to see a fair trial given to the *new husbandry*, seem to rely on the *Englishman*, who assures us, that he has now, “by repeated and expensive attempts, the *simplest* and *completest* apparatus any man ever had;” a fact in which (I judge from his own writings) he can neither *be deceived* nor *deceive*.

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## N U M B E R LXXX.

*A further Enquiry into the Characteristics of Burnet, cultivated by Mr. Rocque.*

GENTLEMEN,

THE pains which Mr. *Mills* has been at in compiling so considerable a work as his “*New and Complete System of Husbandry*,” and the many useful things



to be found therein, intitle him to respect; and his endeavour to become an useful member of society, in the almost only way he can, is a very laudable aim. His *very infirm state of health* calls for all possible tenderness; and the gratitude he expresses for any guidance in his laudable pursuit, deserves all possible civility from those who think they can suggest amendments. The readiness which I have shewn to praise his *judgment*; (see page 128. of your present Volume) will acquit me, gentlemen, in your opinion, and Mr. *Mills's* too, I hope, of having any motive to controvert any assertion of his, except such as himself must approve, *viz.* a desire to advance our researches after useful truth.

Mr. *Mills* seems sensible of my civility in avoiding so offensive a term as *contradiction*; and I heartily wish that he had, in his letter to you, either shewn clearly that there was *no contradiction*, or (as I advised, with *real friendliness*, see page 24. of your present Volume) *prudently* and *generously acknowledged* and *corrected* his *contradiction*. But as Mr. *Mills* has rather chose to accuse me of *inattentive* reading, than to clear himself of contradiction, I am obliged, in justice to myself, to shew that I was guilty of *no inattention* in reading his article of *burnet*. If I had read any part of this article *inattentively*, (as he accuses me to have done) and then *publicly in print* accused him of *confusion* and *contradiction*, I should have been guilty of a fault, for which I ought to have asked his pardon *publicly*: but if I have not been guilty of this fault, of which I am thus publicly accused, Mr. *Mills's* own honour and generosity will suggest to him, what I have a right to expect. Let us see then, gentlemen, on which side the fault lies.

Mr. *Mills* tells you (page 137. of your present Volume) that if I had been *pleased* to read *attentively* the last paragraph of his article of *burnet*, page 291. of his third volume, I should have seen that he there speaks with *greater certainty* than he had done in the preceding part of that subject.

I will assure Mr. *Mills*, that I *habituate* myself to read every thing, except trifles, with attention; and that I read  
his

his *whole article of burnet* with the strictest attention *several* times; and that I cannot now, on a most attentive re-perusal, think differently from what I did on my writing to you on that subject.

Whether this opinion of mine proceeds from a want of *clear conception* in myself, or a want of *clear expression* in Mr. *Mills*, I will leave you to decide, when I have laid the passages before you; but that it proceeds not from inattention, I may safely venture to affirm.

Mr. *Mills* (in his 283d and 284th pages) says *expressly*, that Mr. *Rocque's* burnet is the *pimpinella* of *Linnaeus*, the *tragoselinum* of *Tournefort*, and the *pimprenelle* or *boucage* of the *French*, and proceeds to describe it and its culture through the following pages, to line 23. of page 291. having in some of the last lines spoke of *saxifrage* as the same plant with Mr. *Rocque's* burnet. In line 23. he tells us, that Mr. *Rocque's* burnet SEEMS to be the *pimpinella sanguisorba* of Mr. *Ray*.

Now, in the name of *candour*, what degree of attention could lead any man of common sense to conclude, that he was *more certain* of a matter, when he used the term *seems*, than when he *positively* asserted that a thing *was so*?

The only conclusion which any man of common sense could draw from these passages, was, that Mr. *Mills* *contradicted himself*, though I was desirous to avoid *so offensive* a term (which the passages *quite merited*) out of mere civility.

But Mr. *Mills* now lets us into a secret, which no attention could have found out.

By obtaining some of the seeds of Mr. *Rocque's* burnet, he thought he discovered that he had been wrong in all the description he gave of the plant, and that it was a very different one from what he had apprehended; and therefore he added the last paragraph in that article, beginning at line 23. of page 291. (See his account in page 138. of your present Volume.)

Now let me, in the name of truth, ask Mr. *Mills*, what he takes to be the distinction betwixt *contradiction* and *correction*? I have been always taught, in the course of my



education, that when people assert *inconsistent* things, and retract neither, they are guilty of *contradiction* ; but when they introduce the latter of *two inconsistent things* with a declaration that they retract the former, they use a *laudable correction*.

Had Mr. *Mills*, therefore, begun the 23d line of page 291. of his 3d Volume in this manner, “ I now find that I am very wrong in all I have above asserted about the nature of Mr. *Rocque*’s burnet; and I am now *more certain* that it is the *pimpinella sanguisorba* of *Ray*, a very different plant from the *pimpinella* of *Linnaeus*, &c.” he would have saved me the trouble of charging him with the *appearance of confusion* at first, and now (in my own defence) of *real contradiction*, and have saved himself from the pain which an *ingenuous mind* must bear, when it reflects, that it has charged another unjustly with *inattentive reading*, &c. to conceal one’s own defects.

But, though Mr. *Mills* seems now *sufficiently* convinced that Mr. *Rocque*’s burnet is the *pimpinella sanguisorba* of Mr. *Ray*, he will, I hope, allow his readers to withhold their assent, till he has given them fuller proof than he has yet favoured them with.

He founds his opinion solely on what he calls the distinguishing mark betwixt the *pimpinella saxifraga* and the *pimpinella sanguisorba*, viz. that the seeds of the former are *oblong* and *smooth*, and have *channels* along their surface, while the latter have *ribs* along their surface. (See page 138. of your present Volume.) It seems very extraordinary to fix the criterion of plants so different as the *burnet* and *saxifrage* in the difference only of *ribs* and *channels* in the seeds, without any mention how Mr. *Rocque*’s burnet agrees with either of these in the stalk, and with very little mention of the leaf and flower.

We must ask Mr. *Mills*, whether the *pimpinella sylvestris major sanguisorba* of Mr. *Ray* differs considerably from the *pimpinella sylvestris major sanguisorba* of *Parkinson*? If it does not, as probability suggests, that plant’s description agrees well with our *wild burnet*, but, as I am told by an acquaintance

tance of Mr. *Rocque's*, not at all with the plant which arises from his seed.

Another circumstance in Mr. *Mills's* account, which deserves particular notice, is the *colour of the flowers* of Mr. *Ray's pimpinella sylvestris major sanguisorba*. He tells us, that this plant has *flores spadicei*; that is, in all *reasonable* interpretation, that the characteristic colour of these flowers is *red* or *reddish*; the latter being the more proper, as *rubri* would have been used to express a *proper red*; and *spadiceus* is, I think, used to express that colour in horses which we call *chestnut* or *bay*. Now this word is expressive enough of the colour of the common wild burnet: and how does it agree with the colour of Mr. *Rocque's* burnet flowers? Why truly Mr. *Mills* assures us, that “ Mr. *Rocque's* field affords abundant instances [of it] in the beautiful red colour of the flowers of many of his plants.” (See page 138. of your present Volume.)

Now, when Mr. *Mills* thought Mr. *Rocque's* burnet to be the *saxifrage*, he observed (page 286. of his third Volume) that “ a variety of this with *red flowers* is frequently found among the other, [the white] and rises from the same seed.” This is known to be the case in many other plants. In short, gentlemen, *white* is known to be the *characteristic* colour of the flowers of *saxifrage*, but attended with the variety of some *red* or *reddish* flowers. *Red* or *reddish* is known to be so characteristic a colour of the flowers of common wild burnet, that it is not known to have any other. Yet Mr. *Mills* concludes, that because red flowers are found among Mr. *Rocque's* burnet, it *cannot* be *saxifrage*, but *must* be *wild burnet*.

You, gentlemen, have sufficiently observed, “ that Mr. *Mills's* suggestion, that Mr *Rocque's* plants are not all of the same species, seems but ill-founded.” (See note † to page 139. of your present Volume.) But I must observe that Mr. *Mills*, in giving this suggestion, says, “ that to a *nice* botanist they [the plants of Mr. *Rocque's* burnet] might perhaps be divided into a greater number of species than **THESE TWO.**” (See page 139. of your third Volume.)

Now



Now by THESE TWO Mr. *Mills* must mean the *saxifrage* and the *common wild burnet*; and though they may be called *species* on one account, as being ranked by *Latin* botanists under the common name of *pimpinella* as a *genus*, yet in nature they are so different plants, that no one would think them *species* of the *same genus*; and there must be so much difference betwixt them, that I should imagine no one would think of comparing such difference with the *accidental* or *seminal* differences betwixt Mr. *Rocque's* plants.

Mr. *Mills* declares, that he receives *kindly* my advice, to correct, in his next edition, any errors which may be pointed out in this, and will give such corrections *gratis* to the purchasers of this; as also to add any emendations worthy the notice of the public, which may arrive before the finishing of the present edition.

Now, as Mr. *Mills* says that his state of health is *very infirm*, and that the purchasers of his present edition are very numerous, it is extremely probable that he may not live to superintend another when wanted; therefore it would be much more for his own honour, and the satisfaction of his purchasers, if he would publickly name a time within which he would *receive* and make a proper use of such emendations as may be sent him, and then present *gratis* to his purchasers the result, in one or more sheets.

In such case I promise him that I will re-peruse his work with great attention, (God giving me life and leisure) and communicate my observations with as much *candour* and *civility* as he can wish to find in,

GENTLEMEN,

Your most obedient friend and servant,

East-Newton,

THO. COMBER, jun.

Oct. 16, 1764.

*P. S.* In my letter in page 24, line 16, of this Volume, for “(as that of the burnet is) and” read “as that of “the *burnet saxifrage* is, which.” This must, I think, be an error of the press: surely I could never transcribe my foul copy so *inaccurately*, and make such nonsense.

That

That plant which we call commonly *saxifrage*, and which I apprehend to be *burnet saxifrage*, does not, indeed, exactly agree with the delineation of *Parkinson's burnet saxifrage*; the leaves in the delineation not being so finely cut by far as in the original, which difference may be ascribed to the imperfection of his artist in the wooden cuts. But, though the agreement betwixt the delineation and original is exact, one cannot well doubt but that *Parkinson* meant by his *burnet saxifrage* what is now commonly called with us only *saxifrage*; for, in the first place, if our *saxifrage* is not meant by his *burnet saxifrage*, so considerable and common a plant is not recorded by him at all, none of the *umbelliferous* plants, excepting this of *burnet saxifrage*, agreeing with it tolerably; and all the *saxifrages* in tribe IV. having round leaves, and not being umbelliferous: and, in the second place, it is utterly incredible, that so laborious a researcher as *Parkinson* would have omitted such a plant as our *saxifrage*.—In my letter, page 207 of this Volume, line 10, for “letter writers,” read “latter writers.”

## N U M B E R LXXXI.

*An Account of two Letters, concerning the Growth and Nature of Burnet and Lucerne, betwixt the Reverend Mr. Comber and Mr. Lancaster, in a Letter to the Editors, from Mr. Comber.*

GENTLEMEN,

**T**HOUGH, from an agreement in the general description betwixt the burnet cultivated by Mr. *Rocque* and the *burnet-saxifrage*, I was inclined to think that Mr. *Rocque's* burnet might be our *saxifrage*, yet, as I was not well enough acquainted with *saxifrage* to know whether or no it ever continues green through a whole winter, I determined to write to Mr. *Lancaster*, in whose garden I had seen this summer what he believed Mr.

*Rocque's*



*Rocque's* burnet, to enquire some particulars concerning it; and I added a word of enquiry about his lucerne.

I send you, gentlemen, a copy of my letter to that sensible gardener, and his answer, with no alterations except such as a man of business's inattention to grammatical accuracy made necessary. I shall subjoin some observations, and am, GENTLEMEN,

East-Newton,

Your servant,

November 6, 1764.

THO. COMBER, jun.

P. S. I have ready for you, gentlemen, a packet to be sent by the *fly*, in which I give an account of the proper culture of rye, as desired by your correspondent Mr. *Mitchell*, with whom I join in a request, that some of your experienced correspondents will favour us with an account of the nature and culture of the *naked oat*, as the best of our present accounts is very imperfect.

Mr. *Mills* informs us, that, “ in the *northern counties*, “ in *Scotland*, and in *Wales*, it is pretty much cultivated, “ and is *particularly esteemed* because its grain threshes “ clean out of the husk, and *need not be carried to the mill* “ *to be made into oatmeal or grist.*” Vol. I. page 410. If this account be true, it is a *very valuable* oat indeed, and I wonder that it is not cultivated *alone* for oatmeal, the expence of the mill being considerable. I never heard however of such an oat, nor can I conceive it *natural*, or even *possible*.

In this large northern county, where so much oatmeal is used, 'tis surprising that no body one meets with has ever heard of such a thing. Mr. *Mills* gives not his authority; but as I know he uses frequently to transcribe large passages from *Mortimer* word for word, even to the odd expressions which often occur in that *sensible* and *useful* writer, I looked into him, and find the following account: “ In *Staffordshire*, and *almost all* the northern parts, “ is a sort of *red* or *naked* oats, that is extraordinary good “ for oatmeal, because the kernel threshes out of the “ hull without carrying it to the mill, or drying of it.”

Thus it appears, that all Mr. *Mortimer* means is, that the naked oat need not be dried, or otherwise managed, to get quit of the hull; but it must surely be carried to the mill to be *ground into oatmeal*. This was an unhappy over-sight in Mr. *Mills*, who has also omitted the only hint of the peculiar culture of this oat which occurs in *Mortimer*, viz. that the farmer *orders* these oats as he does barley; that is, I suppose, gives them a foil in the finest tilth. Oatmeal frequently acquires a bad taste from the drying of it; and therefore the *naked oat*, which need not be exposed to such inconvenience, is valuable on that account.

Nov. 11, 1764.

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## N U M B E R LXXXII.

*A Letter from the Reverend Mr. Comber to Mr. Richard Lancaster, Post-Master, in Easingwold.*

Mr. LANCASTER,

**W**HEN I saw you last, (viz. in June\*) you shewed me in your garden some of the plants which rose from burnet-seed, which (you assured me) came from Mr. *Rocque*, with whom, you told me, you had a personal † acquaintance.

You then observed to me, that the few plants which rose from the seed you had sown, were not at all like the common wild burnet.

I desire you will send me word, by the first opportunity, in what condition your plants now are, and what plant now known to you they most resemble.

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3 A

I wish

\* Namely, on Whitsun-Monday.

† This acquaintance commenced when Mr. *Rocque* was gardener at *Myton*, to Sir *John Stapleton*, and Mr. *Lancaster* gardener, at *Sowerby*, to Mr. *Bell*.



I wish you would send a few of the seeds which you \* did not sow, that I may examine and compare them with a † description lately published.

How succeeds your lucerne? How does Mr. *Bell's* ‡ succeed?

I am, SIR,

Your friend, &c.

THO. COMBER, jun.

P. S. I desire an answer.

### N U M B E R LXXXIII.

Answer to the above Letter from Mr. *Lancaster*.

To the Rev. Mr. Tho. Comber, at Tho. Comber's, Esq;  
at East-Newton.

REVEREND-SIR,

I Received your kind letter, and I beg pardon for not answering it before; but I was from home at the time it came, and some time after.

As you desired me to acquaint you about the growth of my burnet, I shall give you the best account of it I can, and what I think of it.

I have sent you both the root, grass, and flower, as I have it in my garden at present, which I do believe to be the right sort which Mr. *Rocque* gives an account of.

First of all, I sowed it in May, and part of it came up, as I let you see; but after that it grew very fast, and flowered about August, and, to try experience, I cut that down which was grown so big; and since that it has grown as you see it, both with flower and seed, but *not*  
ripe;

\* Mr. *Lancaster* seems not in his answer to have attended to this part of my request. I knew he had some of the seed remaining unsowed.

† Namely, by the editors of the *Museum Rusticum*.

‡ This gentleman, *Peter Bell*, of *Easingwold*, Esq; has a just taste for improvements in agriculture.

*ripe*; but if I had let it have stood one month longer, the seed would have been *full ripe*.

I am *very sure* it will keep green, and grow all winter; but I have not tried whether the cattle like it or not; but I think they must, as it seems to be a very sweet grass; and, I dare say, it will answer for pasturing.

Likewise, I have sent you some of the *wild burnet* as it grows with me; and there you have both root, grass, and seed, as it groweth this year. But I will assure you, that this burnet dies down every year (and as at this time is hard to be found, but that I was very well acquainted with the place where it always grows); and that it does not appear in the spring till April; so that this wild burnet cannot be it which Mr. *Rocque* speaks of, for this is quite contrary to his account of burnet.

In my opinion, the burnet will answer best upon low, sandy land, and not on clay land: but this may be tried by experience, as I would always have every one to try experience on a little ground before they go too far, as it will be attended with a great expence to the farmers; but (that is inconsiderable) if it will answer what Mr. *Rocque* says of it, *viz.* that it is *perennial* and *lasting green* all the year, which no other *burnet* does, that ever I heard of.

And now I come to give you an account of my lucerne, as it grows in my garden. The first year I sowed it, it was upon a piece of fine, sandy ground, but poor, and in drills about one foot asunder, that I could hoe between each row, so that I kept it very clean the first year, otherwise the weeds would have choaked it; and it produced a very good crop the first year; and this is the second year, and I let it stand to seed, and to shed its seed where it grows, to see if it will grow between the rows, as they are clear from weeds, and I have had two good crops this year; but it requires a very good season to get it, as it is of a grossy nature; therefore, in my opinion, it will be proper to sow it by itself, and not with any corn, as the corn, or weeds, will choak it.

I will assure you, that cattle are very *fond* of it; and do believe it to be very good fodder, if it can be well got;



but that is a thing which I am of opinion the farmer will think very tedious : and without it be well got, it will be of no service.

I spoke to Mr. *Bell* about his, (lucerne) and he told me, that it was choaked with the barley that he sowed amongst it : so that is a plain proof it will not do without keeping very clean the first year. And as for his burnet, he has transplanted it out this back end, so that I can give you no account of that ; but, in my opinion, the best way to sow the burnet-grass will be, to sow it with the broad-cast, on very fine light ground ; and I think it will soon overcome the weeds, and be very rank ; for it will soon cover the ground, if it is ground it likes.

SIR, I am,

Your most obedient,

Easingwold,

And dutiful servant,

Nov. 2, 1764.

RICH. LANCASTER.

## NUMBER LXXXIV.

*Observations on the foregoing Letter, by Mr. Comber.*

I. **M**R. Lancaster is very positive, that the *wild burnet*, of which he sends me a specimen, and which is exactly the same as what I have always understood to be *wild burnet*, dies down at this time of the year, and appears no more till *April*. Hence he rightly concludes, that this cannot be the *burnet* which Mr. *Rocque* propagates, because its chief recommendation is its being a *green winter-fodder*.

II. Mr. *Lancaster* is as positive that the *burnet*, of which he sends me a specimen, and believes to be Mr. *Rocque's*, will not only *keep green*, but *even grow* all winter. I suppose him to conclude so from the flourishing state in which it now appears, and from the account that Mr. *Rocque's burnet* does so continue ; for he cannot certainly know this from experience, having only sowed the seed last May.

However,

However, I confess myself to have some doubts of the continuance of Mr. *Lancaster's* burnet in verdure all the winter, on two accounts; one is, that this remarkably-open season has suffered many plants, which are surely annual, to retain their flourishing state; I have peas in full flower. The other is, that I have observed in the specimen sent by Mr. *Lancaster* several stalks *perfectly dead*, and as brown as the *wild burnet* of which he sends a specimen. I am not therefore quite convinced, that the more flourishing state of Mr. *Lancaster's* burnet may not proceed from its more abundant juices, and these be owing to its better culture. I hope, however, that he is not mistaken.

III. Upon a diligent comparison of Mr. *Lancaster's* burnet with the several species of the burnet recorded and delineated by the learned *Parkinson*, it appears to agree exactly with his third species, viz. *pimpinella major five sylvestris*.

IV. It is very remarkable, that *Parkinson*, in his account of the times of the growth, &c. of the several species, confines himself to the flowers and seeds, but takes no notice of the leaves.

V. *Parkinson* takes likewise no notice whether the leaves of the *burnet-saxifrage*, or *saxifrage*, be *perennial* or *annual*; but I apprehend them to be *annual*, and, consequently, that I am mistaken in looking upon the *saxifrage* as Mr. *Rocque's* burnet.

VI. Had Mr. *Lancaster* sent me any of the seed which he did not sow, I should have been able to conclude, from a comparison of it with your description of Mr. *Rocque's* burnet-seed, whether Mr. *Lancaster's* be the same as Mr. *Rocque's* or no.

VI. Mr. *Lancaster* concludes, that Mr. *Rocque's* burnet will thrive best on a *light, sandy* soil, and the soil on which he has sowed his is of this kind; and *Parkinson* describes the soil, on which the *smaller burnet* grows, to be *light and sandy*.

VII. *Parkinson* describes the soil, in which the *greater burnet* grows, only generally as meadow-land, or more particularly



ticularly as a meadow by *Pancras* church, two or three fields near *Boobie's-barn*, and a causeway side in the middle of a field by *Paddington*. Though at this distance of time it may be difficult to find all these places, yet one would think, in some of them, the burnet described by *Parkinson* might be found; and as Mr. *Mills* assures us, that half the grafs in the meadows about *Windsor* is burnet, you, gentlemen, who live in town, may easily inform the publick, whether the *burnet* in those fields agrees with the description of *Parkinson's* third species, and what the soil is.

VIII. Mr. *Mills* only says, that the soil for Mr. *Rocque's* burnet should be in fine tilth; but Mr. *Rocque*, in the letters published in your *Museum*, seems to approve of a light soil.

IX. I have set the roots which Mr. *Lancaster* sent me, in a newly-dug-up ridge in my garden, which bore potatoes in 1763, and had peas this year, and consequently is mellow. I have supported the stalks, which are above a foot long, on some pea-rods, that they may not rot by lying on the ground; and thus I shall have an opportunity of seeing how this burnet thrives when transplanted, and how much it grows in the winter.

X. The roots of Mr. *Lancaster's* burnet, though only sown in May last, are about a foot long; and hence appears the advantage of sowing this seed in a soil deeply loosened. The burnet seems to be a very gross grafs, and by the length of its roots to answer the description of those succulent plants, which *inspire* by their leaves, and *perspire* by their roots, and communicate such moisture to the ground as enables them to live even among stones, as is the case with *saintfoin*.

XI. Mr. *Lancaster's* account of the good success of his own lucerne in drills, and the destruction of Mr. *Bell's* sown in broad-cast with barley, seems a just condemnation of the latter method. And yet it must be observed, that the ill success of Mr. *Bell's* lucern may be perhaps owing, at least in part, to the sowing too much barley with the lucerne; for he told me, that his seedsman had given too much of the former.

It may deserve further trial, whether a small quantity of barley, sown with lucerne, may not contribute to keep down the weeds, at the same time that it may not be powerful enough to keep down the lucerne.

XII. Mr. *Lancaster's* observation, that the hay of lucerne requires a favourable season, should not discourage its culture, as it must answer well when cut for green summer-fodder; and if *lucerne* will supply good green summer-fodder, and *burnet* good green winter-fodder, the farmer need not be solicitous about a good hay-season, thought hitherto of such consequence.

XIII. Though the value of burnet has not been known amongst us till lately, it seems to have been not unknown to our ancestors; for *Shakespeare*, in one of his historical plays, (I do not just now recollect which) in a description of the beauties of *France*, places *burnet* among other excellent plants; and, no doubt, the poet took his idea from his native country.

XIV. In the spring of *A. D.* 1752, I sowed some acres with lucerne, and had as bad success as Mr. *Bell* has had, though the soil seemed to promise well: but I had some disadvantages greater than Mr. *Bell* encountered, viz. that I sowed oats with my barley, and therefore sowed earlier than I need to have done had I sowed barley only with my lucerne; consequently I could not have my ground in so fine order as it might have been a month later; besides the weeds had more time to grow, and the oats got up to be a shade sooner than barley would have done, and over-shaded the plants of lucerne.

I would for these reasons advise any one, who sows corn with *lucerne*, to sow rather barley than oats. The seed too, which I got from an eminent seedsman in London, was bad, insomuch that the farmer who sowed it, upon biting several of the seeds, prophesied that little of it would come up; and he prophesied aright.

XV. Mr. *Mills* (Vol. III. page 383.) concludes that *burnet* will answer well upon downs; and his reason is, that we commonly find *burnet* grow on very dry and shallow soils. But as Mr. *Mills* has not yet shewn clearly, that he is well



*acquainted with burnet*, less regard can be paid to his opinion herein.

XVI. Parkinson's account of *garden-burnet* is, that it is the wild sort cultivated in gardens to be ready on occasion.

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## N U M B E R LXXXV.

*A Method of preventing a Wheat-Crop on lightish Land, from being Winter-proud.*

GENTLEMEN,

**M**OST farmers are fond of new wheat: yet ask them why they are so, and they can assign no reason; it is enough for them, that their ancestors have been the same.

I, who love now and then to make my observations on causes, as well as their effects, have found by experience that it is sometimes most advantageous to sow old wheat.

I have a field of twenty acres, which, whenever, for a long space of time, it came in course to be sown with wheat, was always sure to make it winter-proud.

The soil, being rather light, was not perhaps the best adapted to the growth of wheat; yet was it convenient to me to sow it in its turn with wheat, for many reasons, particularly as it lay near my house.

I endeavoured therefore to find some remedy for this distemper, as I thought it, in the soil: I tried several sorts of manure, and even lessened the quantity, but without its answering my expectations; at last accident pointed out to me a remedy I had long sought in vain.

Towards the latter end of wheat seed-time, about ten years ago, my ploughmen were putting a finishing stroke to sowing; but suddenly one of them came to me, with a report that they had not seed enough: I was for some time at a loss what to do, as my seed-wheat was expended; and the weather being fine required dispatch. At length, however, I recollected I had in the house a sack of old wheat, intended

tended for family use: I ordered them to take it, and they sowed it accordingly.

In about three months after, on viewing the field I found that the old wheat was backwarder than the new; and this inspired me, the next wheat-feed time, to try old wheat on my twenty-acre field above mentioned, imagining the crop would not then be winter-proud. I succeeded as well as I could wish, and have ever since continued this practice on all my land that is so inclined. I must however observe, that I sow old wheat rather earlier than I do new.

I am, GENTLEMEN,

Middlesex,

Your humble servant,

Oct. 17, 1764.

E. N.

## NUMBER LXXXVI.

*A Method of preventing heated Corn, or Hay, from firing in the Mow.*

GENTLEMEN,

**W**ILLING to contribute my mite for the benefit of my brother farmers; I shall inform you of an accident which had like to have happened to me last winter.

I had last year twenty acres of barley, which was rather weedy at harvest: on this account I was desirous of giving as much field-room, as I conveniently could; but the weather promising to be very wet, and indeed afterwards it was really so, I was obliged to cart my barley, which I put into the bay of a large barn.

Whilst this work was going forward, I chanced to be called out about some business, and in my absence my son got a horse upon the mow to tread it, which was very indiscreetly done of him; for the weeds not being thoroughly dry, the whole rick of barley heated to a violent degree, so that I was greatly apprehensive of its firing.



My men were in a violent hurry to get it out of the barn; but this I would by no means consent to; however, I ordered one of them to get upon the barley with a cutting-knife, and cut in it a round hole like a well. He began the work; but in about five minutes, being almost overcome by the heat, I sent another to relieve him; and thus they worked, spell and spell, till they had got to the bottom.

This round hole saved my barley, and perhaps my barn too, for it formed, as it were, a chimney or flue, to carry off the heat.

As this method would not, perhaps, have occurred to every one, I send it to you as a hint to be always at hand ready for use, and am,

GENTLEMEN,

Your humble servant,

Hungerford, Wilts,

E. M.

Nov. 15, 1764.

## NUMBER LXXXVII.

*Of the Benefit of Lime, used as a Top-Dressing for Wheat.*

GENTLEMEN,

**I** Have, for some years last past, held a considerable farm in this county of Leiceſter, and have, thank God, met with ſome ſucceſs in my practice.

My methods of farming are thought by many to have ſomething peculiar in them; yet, as I do not often miſcarry, no one has a right to find fault with me.

Great part of my farm is very good wheat land, the ſoil being a ſubſtantial loam.

I frequently, as well as the reſt of my neighbours, make uſe of lime as a manure; but then I uſe it differently from what they do.

The common practice is, to lay about forty buſhels of unſlaked lime on an acre, which makes a peck on every ſquare perch, (half a buſhel when it is ſlaked.) On wheat land  
they

they spread the lime at the same time they sow the seed; but this is a way I do not much approve, and for this reason I vary my practice. The method I use is as follows: I sow my wheat without laying on any manure; but in the beginning of the month of February I get, for every acre of land I intend to lime, twenty bushels of that manure, unflaked, and forty bushels of sand, or the rubbish of a brick-kiln.

Towards the latter end of the month I cause the lime to be flaked, which doubles its measure, and very well mixed with the sand; immediately after which, in the last week of the month, I have it scattered by way of top-dressing over the green wheat; and as rain generally succeeds, it is soon washed down to the roots of the plants, and gives them a vigour and strength of growth, that is really astonishing to a person who had never seen this method practised.

This is my way, if I see the weather is inclinable to be wet; but if it is dry, and not likely to rain, I double the quantity of sand, in order to take away all danger of the wheat-plants being burnt, or hurt, by the strongly-corrosive power of the lime.

The above method I would willingly recommend to the attention of your readers; and though I have benefited greatly by it, yet need they not take my word, as it is so very easy to make a small trial, and form a judgment from the success they may have.

I must observe, that I look upon it to be almost a matter of indifference what kind of sand I use, except that I prefer lime-stone sand to the crystal sand, as being most absorbent, and in truth prefer the rubbish of broken bricks to either.

It will perhaps be unnecessary to tell your readers my motive for this preference; yet that I may not be thought obscure, I shall do it.

When lime is flaked, it crumbles and falls into very minute particles: the smallest of these particles are, together with the moisture that adheres to them, absorbed by the large open pores of the brick rubbish, which afterwards



dispenses them by slow degrees to the soil on which it is laid, for the support of the crop: this occasions the operation of the lime to be more equal; the parts which were not absorbed, are first attracted by the earth; these nourish the young plants, which, in time growing stronger, have power to draw from the absorbent the particles it had reserved for their use.

This may be called refining on agriculture, but I know it has its use.

I am, GENTLEMEN, &c.

Your humble servant,

Leicester,

L. O.

Oct. 26, 1764.

## N U M B E R LXXXVIII.

### *The best Method of harvesting Peas.*

GENTLEMEN,

**P**EAS sometimes turn out a good crop to the farmer, yet is he never sure of them till they are threshed and fold.

I had, last year, a field of fifteen acres under hog-peas, and had reason to have expected a considerable crop; but through the management of some of my men I lost a great part of it.

I sent two companies into the field at one time, to hack them, one on each side; but I observed a great difference in their manner of working: one party of them, who I think, if I remember right, came from Berkshire, hacked their wads very large, and made quick work of it; but the others, though they made less progress, took more pains, laying the wads small and regular.

The consequence was, indeed, what I expected; for wet weather coming on, though I had the whole carefully and diligently turned, the large wads britted, and shed a

con-

considerable quantity of the peas; whereas that part which was hacked in small wads, took no damage.

A neighbour, to whom I told the accident that had happened to me, answered, that he had two or three times experienced the like; but that of late years he had been careful to prevent, by making his men hack his peas in very small wads; by which caution they were seldom liable to be caught in the rain, being much sooner fit for carting than those hacked in the ordinary method; and this is often of no inconsiderable consequence, as a day lost is sometimes the loss of a crop.

I hope my brother farmers will take this caution in good part, and remember to hack their peas in small wads, turning the wads very frequently.

I am, GENTLEMEN,

Your humble servant,

Oxford,

Oct. 3, 1764.

O. A.

## N U M B E R LXXXIX.

*A sure, easy, and cheap Remedy for the Scab and Fly in Sheep.*

GENTLEMEN,

**A**CCCEPT my thanks for giving a place to my second letter in August last, though you have altered some of the words, but nothing of the meaning of it: in some cases 'tis your duty to do so, and none should be offended with you for doing that. But now to business.

It is the duty, and indeed should be the inclination, of every well-wisher to his country, or himself, to preserve the health and save the lives of the most useful animals in it; and of them all, I think the sheep require our first care, for many obvious reasons. I cannot say but there are many valuable receipts, in the course of your collection, adapted to that end; and the writers of them deserve applause for their good intentions; but in some instances they fall short of the desired point.



The two greatest enemies the sheep, or at least their wool (which is the most valuable part of them) have, are the scab and fly. I believe they destroy more wool than all the other diseases incident to that animal.

In Vol. II. of your *Museum*, page 173. Mr. Vesey gives us an approved remedy for the scab, and at the same time enters somewhat into the nature of that distemper. For my own part, I have not presumption enough to look into first causes; secondary ones are all I aim at: I always took nature to be a wise instructor, and the surest guide; but if we will hobble out of the way ourselves, she is not to blame.

I agree with Mr. Vesey, that in this, and every other distemper a sheep labours under, the blood is more or less affected and disturbed; which disturbance, if I am not mistaken, the faculty call a fever; therefore it must be always considered, that a fever is no more than a struggle of nature to get rid of some enemy in the blood, by throwing it out by some of the outlets of the body, namely, by sweat, urine, or stool; or upon the surface of the skin; and then she seems to say, I have thrown the distemper out to your view, and there destroy it by proper applications.

It surely is no scab until it is thrown out upon the skin; and when it is thrown out, what avails it giving internal remedies, to do that which nature has done before? If it be out, there's your ailment; and I think, gentlemen, it is an axiom in physic, that when a distemper is once known, it is half cured: if it is only coming out, my advice would be, not to disturb nature, who is always acting for our good, in a wiser and better manner than we can do ourselves: she sometimes indeed is too weak for her office, and sometimes too strong; in the one case she is to be properly assisted, and in the other, prudently restrained; and when we do more or less, the effects are generally fatal. I hope this will satisfy Mr. Vesey, that he is not altogether in the right, any more than his neighbours.

To cure an illness with a few medicines, is as commendable, as to say a great deal in a few words. One great obstacle to Mr. Vesey's treatment of sheep with scab, is, its being too compound, troublesome, and laborious, setting  
aside



aside the expence, and, where there are a great number of sheep, hardly to be practised. I would have all remedies for the ailments of sheep be as simple as possible, and to be obtained and prepared with as little trouble; for certain I am, gentlemen, when it is otherwise, many will let their flocks go neglected, or at best leave them to a slovenly shepherd, who knows very little of the matter; and when clip-day comes, when the poor creatures are out of their wool, (if they had any on before) what a sight presents itself to view! most parts of their skins being one continued scab, and other parts eat quite through, and deep into the flesh, by the maggot: this I have seen at clip-day, and may speak it; but what must I alledge it was owing to? Sorry am I to say, to the over credulity of the master, who thought he had a shepherd who knew every thing; but the event proved the contrary.

You must not be surpris'd when I say, what will destroy the fly, will also cure the scab, with little or no alterations: mercury is a mortal foe to both; and the remedy for the fly is as follows.

Take of good corrosive sublimate, half an ounce; dissolve it in two quarts of rain water; to which add a gill of spirits of turpentine: this is the whole of it, which must be used in the following manner.

When the sheep is struck, the shepherd must make a circle round the maggots with some of the water, by dropping it out of a bottle: this prevents them getting away, for they will not come near the water: then he must shred or open the wool within the circle, and drop a few drops of the water amongst them, and rub them about with his finger, and there leave them, for they will all die presently.

I speak this from my own certain knowledge, and many others in this part of the country can do the same.

To a quart of the above water I add a pint of the simple lime-water of the London dispensatory; and I declare it from experience, there is no more certain cure for the scab than it: I am sure it is the cleanest, the soonest prepared, and, when so, the cheapest; which are induce-  
ments,



ments, I think, sufficient to have every countryman make use of it.

I have no view in recommending the above waters as superior to any others, or at least that I know of, but for the public good; and as such, gentlemen, I hope you will accept them\*; who am, with all due regard for your undertaking,

Your constant reader,

Isle of Ely,

And well-wisher,

Nov. 1, 1764.

G. B.

## NUMBER XC.

*Method of Stabbing hoven Cattle, with Cautions on the Subject.*

GENTLEMEN,

**A**S many of your correspondents, as well as yourselves, are desirous of knowing the particular methods of stabbing hoven beasts, give me leave to communicate to you what I know relative to it, as it came under my own eye and hand.

Your correspondent in September last, signed *A Devonian*, honestly gave you his method of performing it: in like manner I beg you will accept mine.

Some few years ago, a neighbour of mine had a bullock under this distemper, and never seeing any thing of the kind before, he came to me for my advice: the ox was so bad and blown up, he could not stand. I had somewhere read of this operation, but never had seen it performed; however, upon this occasion, seeing the absolute necessity for some kind of relief, I turned operator myself.

I took a sharp-pointed pen-knife, and fixing my eye on the most prominent part of his belly, thrust the blade through the integuments quite into the *abdomen*: there issued out a great gust of wind very fetid, with some water  
of

\* We are much obliged to this gentlemen for his receipt, and shall be glad to hear from him as often as he has leisure. E.

of a redish colour : the bullock seemed easier, but far from well ; for the wound presently closed up, and admitted no more air to escape ; so that I was under the necessity of stabbing him twice more in different parts of the belly, before he was thoroughly relieved, which, by the help of a glyster after the last stab, was presently brought about : and here give me leave, gentlemen, before I leave this subject, to give a few cautions to those who may be under the necessity, one time or other, of performing this very useful operation : reflection and experience warrant me in them, therefore I shall freely proceed.

First then, if it be performed with a pen-knife, not to be fearful in pushing in the blade a proper length, till you find wind issue out ; for if the wind be in the cavity of the belly, you cannot possibly hurt the gut, the whole body of the wind being between you and it, which no reasonable-bladed pen-knife can touch ; and if the wind should be pent up in the intestine, you must penetrate it before the beast can be relieved. To this last perhaps it may be objected, that we run the hazard of killing the beast by wounding the gut ; but I am far from thinking so, as I have seen many wounds of the intestine, both in man and beast, very happily cured : yet granting there might be some danger in it, still we are certain, if the poor beast can get no relief, it must die ; and so circumstanced, surely, gentlemen, a doubtful remedy is better than none at all.

Another caution is, that where these wounds are made in the belly with a proper pen-knife, it is not adviseable to have them sown up ; for where there is a continual motion or action, as there is in the muscles of the belly and parts adjacent, such a practice is not only unwarrantable, but cruel ; and why should we not behave with humanity to the brute species, as well as any other ?

My last caution and advice is, that upon all these occasions, when the beast is relieved of his wind, a proper glyster should be thrown on immediately, as hot as he can bear it : these glysters strangely relieve them, by acting as a warm, comforting bath to their distempered bowels, and emptying the same of the load of muck within them. I have



more to say on this subject, which I doubt not in the least will meet with general approbation, as it entirely tends to make this operation safe and easy; but unexpected company prevents me communicating it to you at present\*.

I remain, GENTLEMEN,

Isle of Ely,

Your usual well-wisher, &c.

Dec. 15, 1764.

G. B.

## NUMBER XCI.

*A sure Method of judging when Oats are fit to cut.*

GENTLEMEN,

**I** Have often heard the inn-keepers complain of the thinness of their oats, and that they did not half nourish the cattle that were fed on them; yet is it very seldom that you find any reason assigned for this thinness and poverty of the grain.

The true reason is, that the farmers in general cut their oats too soon: they take it into their heads, that rain does not much hurt oats in the swarth; and most of them are of opinion, that when oats are cut green, they ripen in the field before they are carried: but this is a great mistake, for they never increase in size or plumpness after they are severed from their roots; on the contrary, though they may seem to have attained, by lying in the field, a greater degree of maturity, it is not the case.

It is indeed true, that the superfluous moisture will evaporate; but then the grain, not being arrived to full perfection, instead of ripening, shrinks and shrivels within the hull, and contains only a very small portion of crude flour.

I know it will be urged, that if oats are suffered to stand too long, they are very apt to brit and shed. To this I answer, that there is no occasion to let them stand *too long*:  
let

\* We should be glad to hear again speedily from this gentleman. E. O.

let the farmer cut them at a proper time, and he will find that such husbandry will turn out greatly to his advantage. The true and proper time of cutting them is as soon as the oat corn bites dry, and before the oat parts too easily from the chaff or chest which encloses it.

This may be of use to many if you will give it a place in your work, and in so doing you will also oblige,

GENTLEMEN,

Portsmouth,  
Nov. 2, 1764.

Your constant reader,  
JOHN ELTON.

## N U M B E R X C I I.

*Method of judging when Barley is fit to mow.*

GENTLEMEN,

**N**OTHING is more common among farmers than to mow barley before it is ripe, thinking, if they allow it a little field-room to lie in the swarth, it will, without farther trouble, attain its perfect maturity.

This is however a great error in practice, and the maltsters in particular have abundant reason to find fault with it.

When barley is cut before it is ripe, if it happens to be a thin-skinned sort, it will shrivel and wrinkle in the field; and if it is a thick-skinned sort, the flour shrinking, there will be a sensible cavity between it and the skin; neither does this malt ever come well in malting.

Another inconvenience also attends mowing it before it is ripe, which is, that it threshes much worse, and is apt, on that account, to be bruised under the flail.

Most farmers, if they see that the grain is full, dry and hard, imagine their barley must then of course be ripe; but in this they also mistake, as the only certain method the farmer has of judging when it is fit to mow, is to observe when the ears droop, and fall, as it were, double against the straw. When all the ears are so doubled,



then let him send in his mowers, who may make quick work, and he may carry his barley almost as soon as it is down, without any danger of its heating in the mow.

I have sometimes found it worth my while to get the strong weeds, such as thistles, and others of that nature, picked out of my barley as it lay in swarth.

I am, GENTLEMEN,

Your humble servant,

And constant reader,

Watford,

A HERTFORDSHIRE FARMER.

Nov. 25, 1764.

## NUMBER XCIII.

*A Method of recovering subsided Chalk, recommended.*

GENTLEMEN,

I Am very happy in having met with the approbation of so sensible a man as your correspondent Y. has proved himself to be by his very useful letters. I wish sincerely he may continue to enrich your work with his labours: I would willingly now and then contribute my mite, but that I am growing very old, indeed old enough for a philosopher, as Mr. Y. would have me sign myself.

I acknowledge with great willingness, that the observations of Mr. Y. with respect to a few words of science made use of in my letter, would be very just, if it was to be read by many common farmers; but the truth is, I did not flatter myself it would be read by many of them; the doctrine contained in it being so new, that few of them will relish it, or even attempt to adopt the practice recommended by it.

My letter was principally intended for the reading of gentlemen, as I was, and still am, fully sensible, that if this doctrine, which tends so evidently to keeping up the value of their estates, is once patronized by them, and put into practice, the advantages will be so very apparent, that the farmer will for his own interest follow the example.

This

This then in some measure accounts for my using the terms objected to, which I thought not obscure, and imagined to be more expressive of my ideas than any other words or phrases that occurred to me. It was natural to write as I thought, and a good father had taken care, above fifty years ago, to have my thoughts methodized by an early attention to my education; so that though a farmer, if I am ignorant, it is entirely my own fault.

I must once more, before I pay the last debt to nature, recommend an attention to my letter on recovering sublimed chalk\*. The value of this doctrine and practice will not probably be known in common till many years after my death.

I am, GENTLEMEN,

Hundreds of Essex,  
Dec. 7, 1764.

Your's, a second time,

A FARMER.

## N U M B E R X C I V .

*Some Particulars relative to the Old Essex Farmer's Method of Husbandry.* (See No. XLVIII. of this Volume, and the last Article.)

GENTLEMEN,

**W**HEN I wrote to you a few days ago, it was not my intention to trouble you, at least for some time, with any more of my letters: at my years it is troublesome to write; yet do I once more take up my pen, to give some satisfaction to a correspondent who signs himself E. S. in your work. (See page 294. of this Volume)

This gentleman, whoever he may be, writes like a man of sense; and I am well satisfied he is a friend to, and a lover of, husbandry: this consideration it is induces me to take any notice of his queries, as I conclude they are not dictated by an idle, speculative curiosity.

But

\* See page 198. of this Volume.



But to proceed, the number of loads I laid on each acre was not always the same: I suited the quantity to the nature and condition of the soil. The practical husbandman must know, that in the same farm where the soil is all called a stiff clay, he will, when he ploughs it, find that the nature, or condition at least, of the clay in the several fields, will vary, it being in some places very stubborn, in others more inclined to be crumbly.

My first business then, when I went about to chalk, was, to examine into this matter; and on the stiffer soil I laid to the quantity of forty loads on an acre, and on other parts of the farm not more than twenty: on common clay, of a middling nature, from thirty to thirty-six loads on an acre, is a good quantity. As to the cost, it is impossible to ascertain it, as I fetched it all home with my own teams: but in this country many reckon, that to chalk a farm well, all expences included, will cost five pounds an acre. I did not find it so dear.

In time, all the chalk will certainly subside, at least, such a considerable part of it, that an indifferent person would not know the land had been ever chalked; and when it sinks in large lumps, it is evidently prejudicial.

I have no particular method of ploughing my land: in our deep soils we, indeed, plough deeper in common than where the bed of vegetable earth lies shallow. When I trench-plough a field, I go as deep with the second plough as four good horses and strong cattle can well draw, being about as deep again as it is ploughed in common.

As to the kind of compost I use, it has been various; but that which I most frequently lay on my land is composed of yard-dung, sand of any sort, brick and lime rubbish, when I can get it, with a few bushels of ordinary lime. This is often turned till it becomes a mellow mixture; and I lay it on to the quantity of from eight to twelve tumbril-loads an acre, according as my land has been more or less drawn by the crops, and with some thought also as to its condition of improvement by the chalk.

I never

I never would, nor ever did, confine myself to any particular course of crops; I always sow what my land will best bear, without any regard to customary methods of husbandry. I never fallow above once in four years, and not even then unless my land is got foul. After a fallow I frequently sow oats, then wheat, thirdly, horse-beans (I generally prefer the common sorts, and have them set by hand in rows, and hoed); after the horse-beans, if the land is in good tilth, barley; then wheat again, upon which, in the spring, I sprinkle a few pounds (about twenty) of clover-seed: the second year I turn up the clover, and sow wheat a second time, on once ploughing, it being harrowed in: after the wheat I sow often the winter tare, which I cut green for my cattle; and then, if the land is inclined to be foul, I give it a fallow.

I must observe, that in this course, after the beans are off, I give the land before Christmas a dressing of compost for the ensuing crop of barley.

Sometimes, as I observed before, I only sow three crops before a fallow, and these I vary according to circumstances; but I seldom chuse to sow wheat for a first crop, as it is the way, on our lands, to have a full crop of weeds, besides the chance of the corn lodging\*.

As to the nature of the chalk I lay on my land, I have always preferred the soft, fat, unctuous sort, as this is much sooner incorporated with the substance of the soil, than that which is harder and of a more stony nature: the former dissolves into a kind of soft pulp, the latter into a fine grit, much more likely to escape the pores of the clay, than the other, which is in substance more assimilated to its nature.

I never was curious to enquire what pits the chalk brought to the port of Maldon came from, except that I knew it was from Kent; I satisfied myself by examining into its quality before I loaded my waggon, and always chose

\* Many of the Essex farmers are of the same opinion with our correspondent, thinking, not without reason, that the dung stocks the land with weeds: this is their reason for taking first a crop of oats. E.



chose such as I have above described when I could get it.

Your correspondent wants to know how often I plough my land in the course of my crops; but he should reflect that it is impossible to lay down any rule in this respect: I regulate my conduct in this matter according to the order of my land, always taking care to get it into good tilth, though I give ever so many ploughings; but the getting land in order does not so much depend on the number of ploughings, as on the time of giving them: however, I usually give two ploughings for oats; three, four, and even five for wheat; two for horse-beans; four for barley, or sometimes only three; and one for wheat when it is sown on a clover lay.

I hope I have now, in some measure, satisfied your correspondent's desire of knowing more of my methods of farming; and I am very glad that my health, which is declining apace, has permitted me to write this letter. I should have entered more at large on the subject, but that I find my spirits fail me when I attend too much to thinking. I must plead *old-age* in excuse for any deficiencies which may appear in this letter; and this plea should the sooner be allowed, as I mean well, wish to do some good in the world before I die, and am still, as before,

GENTLEMEN, Your's,

Hundreds of Essex,

A FARMER.

Dec. 16, 1764.

## N U M B E R X C V .

### *Simple Method of preventing the Smut.*

GENTLEMEN,

I Have seen a great deal, read a great deal, and heard a great deal, of the benefits arising from steeping seed-wheat in brines and other preparations to prevent its being smutty: some have answered, others have miscarried; but

I

I always observed, that if the seed was well washed, it failed not.

I took the hint, washed well, in a large tub, some seed I knew to be smutty: I washed it, I say, in plain simple water, stirring it violently with birchen brooms; and took care, from time to time, to skim off the light corn, impurities, &c.

It answered well, and I have continued the practice ever since: let your practical readers try it, and they will do the same.

As I am a lover of brevity, I shall now conclude, and am,

GENTLEMEN,

Your's, &c.

A NORFOLK FARMER.

## N U M B E R XCVI.

*Some Conjectures respecting the Nature and Properties of Marle.*

GENTLEMEN,

**I** Here send you some probable account of the nature and properties of marle, in hopes it may lead some of your publick-spirited correspondents to employ their thoughts on the same subject.

First then, I apprehend, that a mixture of chalk and clay will produce what we commonly call a chalky marle; and that the several different colours we usually find in marle may be perhaps entirely owing to the nature and colour of the several different sorts of clay, with which the chalk may happen to be mixed.

I believe we shall find, upon a strict enquiry, that there are various sorts of clay, which exactly resemble all the different colours we usually find in marle, at the same time that they contain none of the essential properties of it; as, for instance, there is a kind of blue clay in Essex, which is of so stiff and stubborn a nature, as to be totally unfit



for the nourishment of any kind of plant: with this clay they frequently make their barn-floors; it answers the purpose extremely well. Other instances of this nature might be easily produced.

To this may be added, that when chalk is used as a manure, which it usually is, in small quantities only, it \* soon loses its colour; or, in other words, it soon seems to be entirely lost.

That chalk and clay will make a chalky marle, seems highly probable; and perhaps the other different sorts of marle may be accounted for in the same manner, by supposing that this difference may principally consist in the different sorts of earth, or other matter, with which the chalk may happen to be mixed; for instance, clay, sand, or stoney gravel; and hence may proceed that difference, both in its nature and substance, as well as colour.

That this is not altogether improbable, will appear by considering the nature both of chalk and marle, that they have both of them an oily and viscous nature, which neither clay alone, or any other sort of earth, has. Add to this, that all writers agree, and experience confirms it, that they have nearly the same effects in their operation; and that, when either of them is proper to be used, a much less quantity of chalk, than of marle, will serve for the purpose of manure†.

From hence it is not improbable, that chalk may contain all the essential properties of marle, or that marle may be nothing but chalk, when in its pure and uncompounded state.

I

\* If our correspondent's occasions should at any time call him into the hundreds of Essex, which is the part of the county, where the custom of chalking land is most practised, he will find that chalk is not there used in small quantities. E. O. N.

† We fear our correspondent's hypothesis will not in all points stand the test of enquiry. In our Second Volume, page 376. he will find a valuable tract on the nature and properties of marle; in which several methods are pointed out for discovering whether it is genuine: let him examine the chalk he suspects to be of the nature of marle, and he may perhaps find it a genuine marle; for some sorts of marle have (he must know) greatly the appearance of chalk. E. O. N.

I cannot omit another argument in proof of what has been said: it is an established maxim, that marle is not proper to be used on chalky land\*; and neither the use of chalk, or marle, is to be often repeated on the same land†.

I am, GENTLEMEN,

Hants,

Your most humble servant,

Nov. 11, 1764.

J. P.

## NUMBER XCVII.

### *Profitable Method of fattening Pigs.*

GENTLEMEN,

**I** Every year fatten a number of hogs for the London markets; and it is universally allowed, that the pork from my styes is better than most of what is to be got in London. It is, indeed, very fine, sweet, white, and has a true flavour.

This difference arises from two or three causes. In the first place, I put up none but young porkers; secondly, I fatten them all on sweet, wholesome food, such as barley and oatmeal, beans or peas; and, lastly, I manage them as I shall just now tell you.

My method is, to put up four pigs in a sty, for they feed best in company; but, if there are too many, they are

3 D 2

apt

\* Farmers say there is a great and manifest difference in the effects of chalk and marle; the first is well known to be the properest manure for a stiff clay, whereas the last is, they say, only proper to be laid on light soils: how far this will hold good, we shall not at present examine. E. O. N.

† It is well known in modern practice, that the use both of chalk and marle may, with some necessary precautions, be safely repeated on the same land, as often as there may be occasion. When our correspondent has examined, as we recommend he should do, into the nature of chalk and marle, we shall be obliged to him if he would communicate to us the result of his experiments. In the mean time, it would be esteemed a favour, if he would, through the channel of our work, communicate to the public some of the practices in husbandry, peculiar to the hill-country of Hampshire. E. O. N.



apt to quarrel. The first week they are moderately fed; thrice, during the second week, I mix with their barley-méal as much antimony as will lie on a shilling; and the third week I twice give them the same quantity: I scarcely need observe it is in powder.

This purifies their blood, gives them an appetite, and makes them thrive a-pace.

Pray publish this for the benefit of your readers, who will be wise if they adopt the practice.

Believe me, GENTLEMEN,

North-West of London,

Your humble servant,

Dec. 1, 1764.

J. L.

## N U M B E R XCVIII.

### *Of a clawed Machine-Harrow for tearing up Stubble.*

GENTLEMEN,

SOME business calling me down into Kent a short time ago, I happened in my journey to see some men at work with a machine somewhat resembling a harrow; but it had wheels, and the teeth, or tines, were formed at bottom in scratching claws.

I perceived they were tearing up the stubble; and, in truth, the machine did rid off a great deal of work in a little time.

I could wish some of your Kentish readers would send you up a model of this machine, as it appears to be wonderfully useful in ridding the land of stubble; which cannot but be of great service to the farmer, as he may thereby get his land much sooner into proper tilth for a second crop, and may, besides, receive some benefit from using the stubble as a firing to heat the oven, brew, and wash with. This is a matter of some moment where wood is dear, as it is in our country; though, in many parts, they would not think it worth attention.

Some writers in your collection are, I find, advocates for ploughing-in the stubble; but how they can defend

such

such a practice, I am at a loss to imagine: they are, perhaps, infatuated by custom; it blinds them to their interest, and they will not even wish to edify by the reiterated experience of others.

It is said, that stubble, when ploughed in, is a good manure; this I doubt: however, I am at least certain, that if the stubble was mowed, or clawed up by the above instrument, and formed into a compost-heap, with other mixtures, in the farmer's yard, it would be certainly efficacious as a manure, and that for this plain reason, because it would be well rotted before it was laid on, and there would be no danger of it cankering or smutting the succeeding crop. I am here talking of a strong oat or pea-stubble, ploughed-in for sowing wheat.

If a man will not divest himself of all manner of prejudices, he will never be in a situation of improving his husbandry practices, but may go on blundering to the end of the chapter. If any of your readers have planted madder with success, I should be glad if they would give the public an account of the method of culture they adopted, as I have some inclination to try what I can do in that way\*.

I am, GENTLEMEN,

Brentwood, Essex,

Your very humble servant,

Dec. 2, 1764.

S. L.

## N U M B E R X C I X.

*Caution to be observed after sowing Turneps on Vale Land.*

GENTLEMEN,

**T**HE soil of our vale is a bluish clay, mixed with black mould, and as it lies low, all our lands are ploughed in high ridges: cross-ploughing we know little of.

As

\* Our correspondent must excuse our omitting the long concluding paragraph of his letter, as it contained some expressions relative to one valuable correspondent, which we would not by any means consent to insert; neither, indeed, could they possibly tend to the instruction or advantage of any one. E.



As this is the nature of the soil, few farmers dare sow turneps; for though they would yield a good crop, yet they cannot be fed on the land; and if they are drawn, and consumed elsewhere, the tap-roots will leave holes into which the water running, it sours the land, and greatly injures the succeeding crop of barley.

A neighbour of mine made the experiment, and found it as I say: this, however, did not discourage me; for a few years ago I sowed some turneps on such land, and having a good crop, drew them; immediately after which I went over the field with a heavy pair of drags. These raised a mould, filled up the holes made by the turnep-roots, and prevented the above accident; insomuch that I had a good crop of barley after the turneps.

I have since repeated this husbandry, and find it answer; which is the reason of my writing, wishing to propagate the knowledge of what may be of use to many. I am,

Your humble servant,

Aylesbury,

A VALE FARMER.

Nov. 15, 1764.

## NUMBER C.

*Some necessary Remarks by the Editors.*

**T**HE editors of the Museum Rusticum have no reason, upon the whole, to be displeased with the character given of that work, by the authors of the Reviews: on the contrary, they take this opportunity of returning those gentlemen thanks for the favourable reports they have made.

But having thus paid this debt of honour, it is necessary they should remember what they owe to themselves and their reputations.

In the Monthly Review for November, is the following passage relative to this collection. “ We cannot help  
“ thinking, that notwithstanding the pains the editors took  
“ to cultivate an early correspondence, there appears a  
“ dearth of matter so early as the latter end of the first vo-  
“ lume; where we find a paper relative to a curious method  
“ of propagating trees, said to have been invented by one  
“ Mr. Barnes. This method was published some years ago,  
“ and, as we have reason to believe, originally invented by  
“ that



“ that industrious labourer in the literary vineyard, Dr.  
 “ John Hill; universally allowed to be the most inventive  
 “ of all *practical* husbandmen. What adds to the impro-  
 “ priety of republishing this paper among original letters,  
 “ without taking notice of its former publication, is, that  
 “ *it is pretended* to be communicated by a correspondent, one  
 “ Mr. W. T. B. who affirms, that he hath tried the said  
 “ method with success. Now, it is in vain, while *such ar-*  
 “ *tifices* as these are made use of, that the editors may think  
 “ to enhance the credit of their work by lamenting, “ that  
 “ they are not permitted to disclose the names of their cor-  
 “ respondents; some of whom stand so high in the learned  
 “ world, that their sanction would carry into practice ma-  
 “ ny excellent precepts, which have now nothing to sup-  
 “ port and recommend them, their own intrinsic value  
 “ excepted.” We would advise the editors, therefore, of  
 “ this respectable publication, to shew themselves, for the  
 “ future, above *these little arts of book-making*, by candidly  
 “ owning what they may think themselves obliged to bor-  
 “ row; as we make no doubt they will always have a suffi-  
 “ cient quantity of original matter besides, to ensure a con-  
 “ tinuation of the success they have already met with and  
 “ deserved.”

To this passage a note is added in these words: “ Will  
 “ the editors say, they were really imposed upon by a cor-  
 “ respondent? This would argue them not to be quite so  
 “ conversant with subjects and tracts of this nature, as they  
 “ probably desire to be thought.”

It is to be hoped, the authors of the Monthly Review  
 will not be offended if the editors, in justification of them-  
 selves, make some few candid remarks on the above  
 extract.

The encouragement they have met with in the correspond-  
 ence of many very ingenious and sensible men, in almost  
 all parts of the British islands, occasions, that there neither  
 is, nor has been, a dearth of matter for supplying this col-  
 lection with a sufficient number of articles extensively and  
 permanently useful; and the editors are moreover of opinion,  
 that the insertion of the article above referred to, was no  
 evidence of a dearth of matter. The real state of the case  
 is as follows. The above article was sent to the editors by  
 the post, addressed to the care of Mr. Newbery, in St. Paul's  
 Church-yard. On perusing it they found it to be what the  
 writer virtually expressed it; namely, an Extract from a  
 Pamphlet, published some years ago, under the name of  
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Insects



# I N D E X.

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